MAP OF LABRADOR

Adapted from Speck (1931, p. 565), showing approximate location, since about 1850, of local bands of Montagnais-Naskapi and Eskimo (oblique lines). The principal settlements along the northeast coast are indicated. The territory west of Ungava Bay is still uninhabited except for inland caribou-hunting parties of Eskimo

ANTHROPOMETRIC OBSERVATIONS

ON THE

ESKIMOS AND INDIANS OF LABRADOR

BY

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DIVISION OF PHYSICAL ANTHROPOLOGY

UNITED STATES NATIONAL MUSEUM

MATERIAL AND DATA COLLECTED

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CONTENTS

PAGE

List of Illustrations 7

Preface 9

I. Introduction 13
- The Eskimo 13
  - Problem of Affiliation 13
  - Problem of Physical Changes Due to Altered Diet 13
- The Indians 15

II. Theories of Eskimo and Indian Migrations 17
- The Eskimo 17
  - Recent Labrador Eskimo 17
  - Thule Eskimo 17
  - Dorset People 18
  - Prehistoric Inhabitants of Labrador 18
  - Theories 19
  - Significance of Theories to Physical Anthropology 22
- The Indians 23

III. Analysis of Metrical and Non-Metrical Observations on Eskimo Skeletal Remains 25
- Methods 25
- Personal Error 26
- Measurements of the Skull: Old Stone Grave Series 31
  - Age 31
  - The Vault 31
    - Diameter Antero-Posterior Maximum 31
    - Diameter Lateral Maximum 32
    - Basion-Bregma Height 33
    - Cranial Index 34
    - Height Indices 34
    - Cranial Module 34
  - The Face 34
    - Diameter Frontal Minimum 34
    - Menton-Nasion Height 34
    - Alveolar Point-Nasion Height 34
    - Diameter Bizygomatic Maximum 36
    - Facial Indices 36
    - Basion-Nasion 37
    - Basion-Alveolar Point 37
  - The Orbits, Nose, and Alveolar Arch 37
    - Orbital Height, Mean 37
    - Orbital Breadth, Mean 37
    - Orbital Index, Mean 37
    - Nasal Height 37
    - Nasal Breadth 37
    - Nasal Index 40
    - Length of Alveolar Arch 40
    - Breadth of Alveolar Arch 40
    - Alveolar Arch Index 40
  - Discussion 40
- Measurements of the Skull: Recent Grave Series 42

	PAGE
Non-Metrical Observations on the Skull	43
Norma Lateralis	44
Profile	44
Pterion	45
External Auditory Meatus	45
Lower Jaw	46
Norma Frontalis	46
Inclination of the Orbits	46
Norma Verticalis	47
Parietal Foramina	48
Norma Basilaris	49
Jugular Fossae	49
Perforation of the Tympanic Plate	49
Teeth	50
Palatal and Mandibular Tori	52
General	52
Microcephaly	52
Pathology	53
Discussion	53
Measurements and Observations on the Long Bones	53
Humerus	54
Septal Apertures	54
Radius	56
Femur	57
Third Trochanters	57
Tibia	57
Long Bone Relationships	61
Reconstructed Stature	61
Reconstructed vs. Living Stature: St. Lawrence Island Eskimo	63
Reconstructed vs. Living Stature: Nunivak Island-Hooper Bay Eskimo	64
Reconstructed vs. Living Stature: Labrador Eskimo	64
General Observations	65
Vertebrae	65
Pathology	66
Discussion	67
IV. RECORD OF CONTACT BETWEEN EUROPEANS AND NATIVE POPULATION OF NORTHEAST LABRADOR	70
The Moravian Missions	70
Population	71
Intermixture	72
Longevity	75
V. ANALYSIS OF METRICAL AND NON-METRICAL OBSERVATIONS ON LIVING ESKIMOS AND INDIANS	76
Circumstances Surrounding the Collection of the Data	76
Problems Involved in Data of This Nature	77
Personal Error	78
Trial Measurements	78
Duplicate Measurements	79
Comparative Data	79
Age	82
Birthplace	82

PAGE

Résumé of Conditions Affecting the Labrador Series 83
Individual Measurements and Observations 84
Stature 84
Sitting Height 85
Relative Sitting Height 86
Head Length 87
Head Breadth 89
Cephalic Index 90
Head Height 93
Height-Length Index 95
Minimum Frontal Diameter 96
Fronto-Parietal Index 96
Maximum Bizygomatic Diameter 97
Cephalo-Facial Index 98
Bigonial Diameter 99
Gonio-Zygomatic Index 100
Menton-Crinion 100
Total (Physiognomic) Facial Index 103
Menton-Nasion 103
Forehead Height 104
Nose Height 105
Nose Breadth 106
Nasal Index 107
Ear Length 108
Ear Breadth 109
Ear Index 110
Skin Color 111
Missing Teeth 112
Palatal Raphe 113
Discussion 114

VI. GENERAL DISCUSSION 119

VII. CONCLUSIONS 124

APPENDICES 126

BIBLIOGRAPHY 155

INDEX 161

LIST OF ILLUSTRATIONS

PLATES

1. Four views of skull 192001 (Field Museum) oriented in Frankfort position. Old stone grave series. Old male.
2. Four views of skull 192031 (Field Museum) oriented in Frankfort position. Old stone grave series. Old female.
3. Four views of skull 192006 (Field Museum) oriented in Frankfort position. Recent grave series. Male, 69.
4. Four views of skull 192007 (Field Museum) oriented in Frankfort position. Recent grave series. Old male. Note pathological changes in maxillae.
5. Four views of skull 192008 (Field Museum) oriented in Frankfort position. Recent grave series. Male, 73.
6. Four views of skull 192009 (Field Museum) oriented in Frankfort position. Recent grave series. Male, 43.
7. Four views of skull 192010 (Field Museum) oriented in Frankfort position. Recent grave series. Male, 37.
8. Four views of skull 192013 (Field Museum) oriented in Frankfort position. Recent grave series. Male, 21. Note diminutive upper lateral incisors.
9. Four views of skull 192025 (Field Museum) oriented in Frankfort position. Recent grave series. Female, 52.
10. Two views of the right humerus of 192009 (Field Museum) showing pathological proximal extremity. Recent grave series.
11. Male Eskimos from Nain, Labrador. Figs. *a*, *b*, and *d* are Strong's subjects 21, 188, and 13, respectively. Photographs by Strong.
12. Male Indians of the Davis Inlet and Barren Ground Bands. Figs. *a* to *d* are Strong's subjects 1, 4, 3, and 39, respectively. Photographs by Strong.
13. Indians of the Davis Inlet and Barren Ground Bands. Fig. *d* is a female. Figs. *a* and *c* are Strong's subjects 34 and 43, respectively. Photographs by Strong.
14. Eskimo women from Hopedale or Nain, Labrador. Photographs by Langford.
15. Figs. *a* and *b*, Eskimo women from Hopedale or Nain, Labrador. Figs. *c* and *d*, Indian women of the Davis Inlet Band. Fig. *c* is Strong's subject 5. Photographs by MacMillan and Strong.
16. Female Indians of the Davis Inlet and Barren Ground Bands. Figs. *a*, *b*, and *c* are Strong's subjects 8, 7, and 37, respectively. Photographs by Strong.

TEXT FIGURE

PAGE

1. Graph formed by connecting the $\times$p.e.'s of various measurements and indices for three Eskimo groups as calculated against the Labrador group. All points above the horizontal line at the level of 3 $\times$p.e. are considered statistically significant 41

MAP

Map of Labrador adapted from Speck (1931, p. 565) showing approximate location, since about 1850, of local bands of Montagnais-Naskapi and Eskimo (oblique lines). The principal settlements along the northeast coast are indicated. The territory west of Ungava Bay is still uninhabited except for inland caribou-hunting parties of Eskimo .... Frontispiece

PREFACE

Among the important results of the 1927–28 Rawson–MacMillan Subarctic Expedition of Field Museum are the measurements secured by Dr. W. D. Strong on a large series of living Labrador Eskimos and a small group of Montagnais-Naskapi Indians. When obvious mixed-bloods and sub-adults are eliminated, these series comprise 137 Eskimos (58 males, 79 females) and 18 Indians (11 males, 7 females). In addition, physical anthropology benefited by the Expedition's recovery of considerable Labrador Eskimo skeletal remains. This material includes 32 measurable skulls (17 males, 15 females), many of which have associated skeletal parts. The present study, while based primarily upon this collection, also presents new observations on much other material, as will appear.

Originally this study was conceived, and indeed largely completed, as a report on the measurements of the *living* Labrador Eskimos and Indians secured by Dr. Strong. These observations on the living seemed such a natural descriptive unit that, although I knew Dr. Strong had also obtained skeletal remains from the same region, I did not at first consider their inclusion in this study. It was only after analysis of the measurements on the living was well advanced that I perceived the need for information on the earlier population of Labrador. Obviously, without some knowledge of the prehistoric Labrador physical type it is impossible to determine what changes may have taken place during the historic period and this complicates group comparisons.

Since measurements on the living of the northeast coast of Labrador date back only to 1880, whereas the historic period began there about 1770, the earlier physical type can best be identified in the skeletal remains. Moreover, since the published data on Labrador skeletal remains are limited to scattered reports on small numbers (see Appendix A), it is desirable to increase these observations. Unfortunately, this applies only to the Eskimo; no skeletal remains of Labrador Indians have been secured.

When I thus undertook to broaden the scope of the study it appeared that the available skeletal remains from Labrador, in combination with the data on the living, constitute a rather unusual series. Dr. Strong secured for Field Museum some skeletons of Eskimos who had received Christian burial during the middle of the nineteenth century. Also, he obtained a few skeletons from pagan

stone graves. It is the latter type of grave, dating back to the eighteenth century or farther, from which have come the few Labrador Eskimo skulls and skeletons described in the literature. Thus there are available for the Eskimo population three groups representing separate chronological periods: (1) an old stone grave series (pre-White, or its equivalent as far as the influence of civilization is concerned); (2) a mid-nineteenth century grave series (early Mission period); and (3) recent living (1880–1928). Naturally, measurements on the living and on the skeleton are not strictly comparable except for a few characters such as head shape and stature. Nevertheless, the combination of these two forms of data for intervals during more than a century is unique for many native populations, and especially so in the far north.

Having secured permission to examine and include the skeletal material, I decided to leave the section on the living essentially as originally planned, except for broadening the interpretation. As will be seen by reference to Chapter V, the comparisons are made chiefly with other data on the living of Labrador. The reason for thus restricting the comparisons is due to the fact that as recently as 1933 an extensive study of measurements on living Eskimos was made by Seltzer. Also, no new information regarding the anthropometry of Labrador Indians has appeared since Hallowell's pioneer study of 1929.

In presenting the skeletal data, unlike those for the living, it became necessary to make certain general comparisons because newer figures have appeared since Oetteking's report—the one study dealing largely with Labrador crania—was published in 1908. It may be added that the series of Labrador Eskimo skeletal remains heretofore studied either are inadequate in number or are not compared with other Eskimo groups.

During the progress of this study, as outlined, I have received from a number of sources assistance which I am pleased to acknowledge. It is desirable in a few cases to tell the story of this co-operation, since it has an important bearing on the course of the study.

From early reading on the subject I was aware of Shapiro's statement (1931, p. 355) that Duckworth and Pittard seem to have measured the same group of Labrador Eskimos. Apparently a group of 26 individuals from Hebron was being exhibited in Europe and was seen by Duckworth in 1899 and by Pittard in 1900. When I noted also that Dr. Boas had reported (1895) the stature of 26 Labrador Eskimos, presumably measured at the Chicago fair (1893),

it occurred to me that perhaps some of this group[1] might have been taken on the European tour. Upon questioning Dr. Boas on this point he stated that his measurements were all taken in Labrador and not at Chicago. Furthermore, he generously sent me the original data, which proved to have been taken in 1891-92 by Professor Leslie A. Lee (see Cilley) and Mr. J. D. Sornberger. These records show that the subjects measured all lived in settlements to the south of Hebron. Since most of the Lee-Sornberger findings have never been published, they greatly enhance the value of the present study.

I discovered that perhaps the largest collection of skeletal remains from Labrador old stone graves is in the Peabody Museum, Harvard University. This collection, for the most part obtained by Sornberger (at the time he measured the living), was reported on briefly by Russell and Huxley in 1899. Since only average measurements are given by these authors, I inquired of Dr. Hooton whether the original detailed records were still preserved. When these records could not be located, Dr. Hooton kindly granted me permission to restudy the collection. The facilities of the laboratory of Physical Anthropology in Peabody Museum made the examination of this material both easy and pleasant.

As already indicated, Dr. Oetteking published in 1908 the only extensive study heretofore made upon Labrador Eskimo crania. The nucleus of this study was the Hantzsch collection at Dresden, consisting of nine skulls from Labrador, two from Greenland and one from the Aleutian Islands (to mention only the adults). For the purposes of his study Dr. Oetteking did not sex these skulls, presumably because much of the comparative material from Greenland (Bessels, Fürst and Hansen)[2] also was not sexed. When I explained to him that I wished to include the Labrador adults in my series, Dr. Oetteking very kindly secured the proper sex identifications for me through Professor Struck of Dresden.

Professor Suk of Brno, Czechoslovakia, kindly sent me his copy of S. K. Hutton's privately printed publication (1926) entitled "Health Conditions and Disease Incidence among the Eskimos of Labrador." A copy of this book could not be procured in this country.

Finally, but not least, I am indebted to the Smithsonian Institution for the full support which I have received during the course of

[1] The correspondence in number is, of course, a coincidence, because the group visiting Europe included children.

[2] The individual skulls were sexed by Fürst and Hansen; but with the exception of C.I., all distributions and calculated means are for the combined sexes.

this study. Not only have I been permitted to use my official time, and the facilities of the United States National Museum, for this purpose, but the Institution has given me leave and defrayed my expenses to Chicago and Cambridge for the purpose of studying the skeletal collections in Field and Peabody Museums, respectively.

December 9, 1938

T. DALE STEWART
United States National Museum

The field work forming the nuclear body of the present report was accomplished in northeastern Labrador during 1927 and 1928 while the investigator was serving as anthropologist with the Rawson-MacMillan Subarctic Expedition of Field Museum. I wish first of all to acknowledge my gratitude to President Stanley Field and the Trustees of Field Museum, to the late Frederick H. Rawson, and to Commander Donald B. MacMillan, for the opportunity thus afforded. To the Moravian missionaries at Hopedale, Nain, and Hebron, Mr. and Mrs. Walter Perrett, Mr. and Mrs. Paul Hettasch, and Mr. and Mrs. Waldman respectively, I am indebted for complete scientific co-operation and unstinted hospitality during my travels up and down the coast. Dr. E. K. Langford was an invaluable companion and assistant on many of these journeys. Finally, I am grateful to Dr. T. Dale Stewart for taking these rough and too often incomplete data and painstakingly fitting them into the present larger study.

For certain errors in a portion of the basic data herein pointed out I accept full responsibility. In part they are personal, in part due to defects in training. Since I am deeply convinced of the basic necessity of the combined biological and cultural approach in anthropology this lack of training and practice in anthropometry is significant. Until all our university departments in anthropology offer adequate opportunities for, and enforce, such training, penetrating biological and cultural correlations will rarely be made by anthropologists. That a field ethnologist among a willing people should fail to record biometric data seems absurd. Yet so long as the field ethnologist or archaeologist lacks the necessary training and practice in this regard the results of such work must always be suspect.

December 15, 1938

WILLIAM DUNCAN STRONG
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ANTHROPOMETRIC OBSERVATIONS ON THE ESKIMOS AND INDIANS OF LABRADOR

I. INTRODUCTION

The Eskimos

The northeast coast of Labrador is peopled by a remnant of the Eskimo population that at the beginning of the historic period extended to the Gulf of St. Lawrence (Speck, 1931, p. 560). This remnant, probably somewhat mixed in blood through long contact with Europeans, nevertheless excites the curiosity of the physical anthropologist for several reasons.

PROBLEM OF AFFILIATION

The coast of Labrador, as far as the Eskimo is concerned, seems always to have been a sort of cul-de-sac; the entrance was from the north; to the south and recently in the interior were hostile Indian tribes. This being the case, speculation naturally arises as regards the wave or waves of migration represented in the modern population, as postulated in the various theories of Eskimo origin and dispersal (see Chapter II). The solution of this problem is hardly to be expected of physical anthropology alone; archaeology must lead the way here. However, the analysis of new anthropometric data from Labrador in the light of recent data on other Eskimo groups, should at least define the problems more clearly.

PROBLEM OF PHYSICAL CHANGES DUE TO ALTERED DIET

From another standpoint new anthropometric data on the Eskimo population of Labrador are of peculiar interest. Since 1771, when the first Moravian mission was permanently established, the major part of the northeast coast has been under the spiritual, moral, and commercial guardianship of the Moravian missionaries. The still relatively high percentage of fullbloods here, retaining many of their original customs, is probably due to the fact of this protection from rapacious commercial interests. In this connection, the missions, while rapidly changing Eskimo beliefs, have seemingly retarded the introduction of such things as European foods. The result is that both the mixed-bloods and the amount of European foods consumed decrease as one goes north; or, in other words, as the influence of the Moravians increases.

On this subject Dr. S. K. Hutton, a medical missionary and a keen observer who spent several years in Labrador, has commented as follows:

> At Okak, and in the north generally, the people are broad and plump, with flat faces and sunken noses; but farther south I have seen lean, sharp-faced Eskimos, with bony limbs and pointed noses. They are pure-blooded Eskimos, all of them; they may be lean and bony without any admixture of other blood; and the cause of the change lies in the altered food and habits of the people themselves.
>
> At the southern stations they are more in contact with the outside world, and, especially, there are English-speaking settlers living among them, cod-fishing and fur-trapping. The Eskimos are born imitators; they do what they see others do; and when they have settler folks living among them in little wooden shacks like their own, and passing in and out among them, it is small wonder that they fall into the settler habits of food and clothing (1912, p. 215).
>
> The missionaries have done the people a good service in persuading them to remain Eskimos in their food and clothing; there has been no attempt to force European ways upon them; and I am convinced of the wisdom of this attitude because I have seen how the natives degenerate when they take to European food. They lose their natural coating of fat to a great extent, and need more clothing to withstand the cold; they become less robust, less able to endure fatigue, and their children are puny (p. 279).

This factor of altered diet is one that has entered all too little into the researches of physical anthropologists, chiefly of course because it is obscured by other factors and also because series of measurements representing different time intervals are not often available. However, among the Western Eskimos the appearance of dental caries has been attributed by Collins (1932) to a change in diet. Also attacking the problem of dental caries from the anthropological approach, Dr. Weston A. Price of Cleveland has made an extended series of investigations among highly immune primitive racial stocks at their zone of contact with modern civilization. He made these further observations:

> . . . I have found that several other degenerative processes rapidly appear in the group being modernized. Among these are a lowered resistance to infective processes and the development of physical disturbances. These are proving to be the result of an inadequate nutrition of the individual during the formative period and related directly to the nutrition of the mother. This latter group often includes facial deformities, crooked teeth, abnormally narrow nostrils with inadequate nasal openings, and a narrowing of the body pattern including the hips. An important phase of this change in physical development is expressed by a narrowing and lengthening of the face. It is most significant that these changes in physical development produce a series of deformity patterns which are characteristic of the people of our modern civilization. It is also of great significance that these deformity patterns are

> the same for all of the primitive racial stocks studied when they have adopted the imported staple foods of our modern civilization, including white flour, sugar, polished rice and canned goods (1937, unabridged abstract).

In view of these opinions, the Labrador material of the present study affords an opportunity to test the effect of this dietary factor, for not only does the consumption of European foods vary geographically, but also in time—as the canning of foodstuffs became more efficient, to mention only one element. On the other hand, if physical changes have taken place in the Labrador population as the result of diet, then it will be appreciated why physical anthropology is handicapped in solving the problem of affinities.

THE INDIANS

Another native element in the population of the Labrador peninsula, and apparently a relatively recent arrival, is the Indian of the interior—the Montagnais-Naskapi tribe of the Algonkin linguistic family. The people of this tribe are nomadic hunters organized into bands, each of which claims a large section of the territory as a hunting preserve (see Map). Extending southward all of the way to the Gulf, the Indians have become much mixed with European blood, especially in the south. Speaking of these southern bands, Hallowell states as follows:

> That [White admixture] has taken place is not to be denied. . . . In some families indeed, it is not only traditional but, as expressed in a few traits, perfectly apparent to the eye (1929, pp. 338–339).

On the other hand, the Indians and Eskimos have always been hostile and probably have not admixed appreciably. Thus Kohlmeister and Koch, writing in 1814 of a voyage of exploration from Okak to Ungava Bay, say that

> . . . to the south of Hopedale the Indians and Esquimaux sometimes meet, but as the Hopedale Eskimaux seek to cultivate their friendship, quarrels and bloodshed seldom occur. In Ungava, however, though they often exchange tokens of friendship, they are apt to give way to their national jealousies; and provocations being aggravated, their meetings now and then terminate in murder. The Esquimaux are much afraid of the Indians, who are a more nimble and active race (p. 57).

About one hundred years later Hutton (1912) found the same reaction at Okak:

> Eskimos and Indians are hereditary foes: even in my time I have seen Eskimos scared at the mention of "Indian," and when I travelled southward my drivers once asked me in awestruck voices, "Shall we see the Allat?" (Indians) (pp. 110–111).

Dr. Strong's data include measurements on living Indians of two of the most northerly bands (Barren Ground and Davis Inlet). It might be supposed, therefore, that these remote bands, as in the case of the Eskimos, would be relatively pure-blooded. However, Dr. Strong's records show that even here both White and Eskimo blood is present, though dilute. This is indicated by the following account of the origin and history of the Davis Inlet band, which I have abstracted from Dr. Strong's ethnological manuscript:

> Paradoxically enough the Davis Inlet band of Indians owes its inception to the mating four generations ago of a Scotchman (or Scotch-Cree halfbreed) and an Ungava Eskimo woman. According to the account of his descendants, this man was a Hudson Bay Company clerk at East Main or some nearby post on James Bay. His post was attacked by Indians, said to be the Mocanuinūits or Rupert House people, and was burned to the ground. Following a successful punitive expedition against the attackers, Mantish [Macintosh?] as he is called by the Indians, went to Northwest River and thence to Petiskapau Lake where he established a post. The local Indians here were the petiskōpauinīuts "Petiskapau people," but even the Barren Ground people occasionally came this far south to trade. The post was later abandoned and Mantish crossed overland with the Indians to Ungava. Here he built another trading post after returning overland for supplies and material which he took to Ungava by sea . . . here he married an Eskimo woman named Habidīnik and had several children. He died in Ungava at a ripe old age.
>
> Most of the children of this mating reverted to their mother's people and their descendants today are probably Eskimo. One son, however, Edward Mantish (or Rich), returned on his father's trail to Northwest River where he married a fullblood Mingan Indian woman . . . but for some reason . . . he moved north to the vicinity of Davis Inlet. . . . For many years after leaving the Northwest River band he lived with the Barren Ground people in the interior and his six sons grew up with these people and with other nearby Labrador Indian groups. Three of the sons married Indian women from the Northwest River band, one married an Ungava Indian woman and two died unmarried. . . . Besides the Riches, another family, that of Long Shan, makes up the Davis Inlet band. Long Shan is a cousin of uncertain degree . . . and came from Northwest River many years ago. . . .
>
> The present generation of the Davis Inlet Band have for the most part married women from the northern [Indian] bands. . . .

II. THEORIES OF ESKIMO AND INDIAN MIGRATIONS

THE ESKIMO

In comparing the Labrador and other Eskimo anthropometric data it is important that those groups be included that may, if possible, throw some light on the problem of Eskimo migrations. To this end it is necessary to review briefly the cultural differentiation of the Eastern Eskimo and the theories accounting for their widespread distribution. The older views—largely speculations—can be ignored here in favor of the latest theories grounded directly upon archaeological and ethnological evidence.

RECENT LABRADOR ESKIMO

Before becoming altered by contact with European civilization, the culture of the Labrador Eskimo seems to have been most closely related to that distributed over the central Arctic. Thus in his study of relationships based on the archaeology of the Central Eskimos Mathiassen makes the following statement:

> .... In several respects Baffin Land and Labrador differ from the Central Eskimos, in that more of the Thule culture has been preserved there than in the central regions proper. This has, for instance, been observed when dealing with the form of houses, the whalebone house still being used in places along the east coast of Labrador. Some of the elements which Baffin Land and Labrador, but not the Central Eskimos, have in common with the Thule culture are, it is true, objects found in the earth which may date from the time of the Thule culture: lamps with a ridge and round-cornered, square cooking pots, etc.; but other types are used to this day and show that the present day Baffinlanders and Labrador Eskimos have inherited a good deal more from the Thule culture than their western neighbours: whaling harpoon, women's boat, etc. In addition, these Eskimos are coast dwellers to a much greater degree than the other Central Eskimos and consequently live a less nomadic life. And yet in most features—and the most important ones at that—they resemble the other Central Eskimos: snow house, sledge, hunting implements, clothing, etc. They are much closer related to the Central Eskimos than to the Thule culture, even if they have taken over a number of its elements (1927, pp. 163–164).

THULE ESKIMO

The Thule culture mentioned in the above statement, the details of which are unimportant here, is a prehistoric phase of Eskimo culture centering in the Hudson Bay region of northern Canada, but also known from Greenland. Some sites in Greenland have yielded artifacts of Norse origin, thus aiding in establishing the chronological position of this culture. Generally, though, in the eastern Arctic,

Thule remains are known only from pre-contact sites, and, where the two occur together, underlying the deposits of the modern Eskimo. However, one group of Thule Eskimos is known to have survived on Southampton Island until about 1902 (Mathiassen, 1927, pp. 284–286).

DORSET PEOPLE

Although Mathiassen considers the Thule to be the original Eskimo culture in the eastern Arctic, Jenness has presented evidence that the Thule in turn perhaps were preceded by the so-called "Dorset" people. He says:

> Objects of Dorset culture types . . . have been found in many scattered districts throughout the eastern Arctic. . . . Thule remains also are known from nearly all these places, or from places not far distant, so that it might still appear probable that the Dorset culture was not an independent phase in Eskimo history, but in some way linked with the Thule. In 1929, however, W. J. Wintemberg, of the National Museum of Canada, discovered several pure Dorset sites (that revealed no trace of European contact such as iron, and, therefore, could not be later than A.D. 1500) along the northwest coast of Newfoundland, and also at Bradore, on the coast of Labrador to the northward. Here the genuine Thule culture was conspicuously absent, as it seems to be also along the coast of Labrador to the northward. It is very difficult to believe that both the Thule culture itself, and a peculiar twelfth to fifteenth century phase of it, could overlap each other in so many parts of the eastern Arctic and preserve their separate characteristics alongside of one another; that this peculiar phase, practically unchanged, could extend from northern Greenland and Ellesmere Island to Newfoundland within one or two centuries. Every difficulty disappears, however, if we regard the Dorset as an independent culture contemporaneous in some places with the Thule, in others preceding and probably extinguished by it (1933, pp. 390–391).

PREHISTORIC INHABITANTS OF LABRADOR

For northeastern Labrador Dr. Strong has described (1930) a stone culture found at three sites between Hopedale and Nain by the Rawson–MacMillan Subarctic Expedition of Field Museum. Owing perhaps to the small number of artifacts recovered, or to the nature of the sites (workshop, small camps) this stone culture is of uncertain relationship to the Dorset and Thule cultures. After describing his finds, Strong concludes:

> There is a striking difference between the sites known to be of Eskimo origin in northeastern Labrador and those we have been discussing. . . . Most of [the Eskimo sites] we examined and excavated dated from early mission times, that is, the latter half of the eighteenth century, and contained objects showing early Caucasian contact. The bulk of the material, however, was Eskimoan and consisted for the most part of steatite (cooking pots and lamps), bone, antler and ivory work, with stone implements other than steatite in a

decided minority. Like the stone, sod and whalebone houses, stone graves, gift cairns and box traps, the material culture revealed by excavation most closely resembles the Thule and the later Eskimo cultures of the central Arctic. . . . Both the Thule and Cape Dorset cultures, like the known Labrador Eskimo sites, are characterized by bone, antler, ivory, and steatite artifacts, whereas the Labrador stone culture under discussion contains almost nothing of these materials and possesses in addition such unique types as the gouge, ground chisel, and oval celt, which are not at all characteristic of the Eskimo. Moreover, these stone culture sites are entirely without the surface indications or abundant bone débris that mark the Eskimo remains. Certain isolated finds such as the stone adzes previously described, suggest that an older Eskimo culture may yet be distinguished in northeastern Labrador that will bridge the wide gap between the old stone culture and the later bone and steatite-working Eskimo culture. This is a possibility, but until such evidence comes to hand I incline toward the belief that the true Eskimo culture reached northeastern Labrador in much the fully developed form revealed in the eighteenth century ruins. If so, this leaves the earlier stone culture with its Eskimo-like stone *ulus*, ground slate points, and chipped scrapers to be otherwise accounted for (pp. 131–132).

The more recent (1934) work of Bird at Hopedale appears to substantiate Strong's conclusions. Moreover, Bird believes that, owing to the finding of European objects in all the sites he excavated, the Eskimo could not have been in Labrador longer than 400 years.

THEORIES

In broad outline, this is the picture of the known succession of eastern Arctic cultures extending back into the prehistoric. By fitting into this picture the mass of ethnological detail for the widely scattered living groups—especially that for the "primitive" Caribou Eskimo of the interior, west of Hudson Bay (Birket-Smith, 1929)—several theories of Eskimo origin and migration have been formulated.

Mathiassen, as already mentioned, regards the Thule as the original Eskimo culture, the first to spread eastward over the Arctic coast of America. To him the Caribou Eskimo are primitive only in the sense of being descendants of Thule people who went into the interior and gave up many of their former customs.

Birket-Smith, on the other hand, considers the Caribou Eskimo as a relatively unchanged remnant of the population from which all the other Eskimos arose. Some time in the past he would have a group move to the central Arctic coast and adapt themselves to the environment of the seashore. Moving westward to Alaska these "Palaeo-Eskimo" in turn would give rise in the course of time to a "Neo-Eskimo" group with a whale-hunting, or Thule, culture. Thus,

it would be the eastern migrations of the "Neo-Eskimo" that led to the introduction of the Thule culture into Baffin Land, Greenland, Labrador, and elsewhere. Later, also according to this theory, a second group moved out of the central regions to overcome the Thule people and become the present-day Eskimo ("Eschato-Eskimo").

Since neither of these theories accounts for the Dorset culture, Jenness (1933, 1937) has been led to formulate still another theory. Speaking of Eskimo movements in Canada during the Christian era, Jenness, in his latest publication, explains his theory thus:

> Some time around A.D. 500, apparently, bands of Eskimos, spurred from Arctic Alaska by some unknown cause, began to spread eastward, dropping settlers all along their route. Some families hugged the mainland and continued to Hudson Bay, others scattered over the islands to the northward and eventually reached Greenland. There, in the southwest corner of the island, Eric the Red and his Norsemen found their traces in A.D. 982; and at Repulse Bay, in the northwest corner of Hudson Bay, the Danish archaeologist Mathiassen recently excavated some ruined stone houses that were built about the same period.
>
> Meanwhile other and more primitive Eskimo roaming the hinterland behind Hudson Bay felt similar stirrings of unrest, and sent out colonies to the coasts of the eastern Arctic. A few families reached Ellesmere Island and Greenland; others monopolized the coast and islands in Hudson Strait; and still others, working down the coast of Labrador, or else traversing the heart of that peninsula, took possession of the north arm of Newfoundland. Whether this movement from the interior to the coast preceded or coincided with the eastward movement of the Alaskan Eskimo we do not know. We suspect that it started several centuries earlier, and that in places where the two peoples subsequently clashed, as in Baffin Island, the western Eskimo had the mastery. We have reason to believe, also, that these western or "Thule" natives differed not only in culture but in physical type from the eastern Eskimo—both those who remained inland and those, the "Dorset" people, who settled on the coast—because the eastern natives seem to have acquired the features of the neighbouring Algonkian peoples with whom they jostled and intermarried through many centuries. . . .
>
> Still holding our gaze on the Eskimo, but dropping down a few more centuries, we can detect, about A.D. 1200, a new impulse surging through the Arctic. Again the Indian-like Eskimo behind Hudson Bay began to stream seaward, this time not to Hudson Bay alone, but to the Arctic coast northward and westward beyond Coronation Gulf, possibly even as far as Alaska. Little by little these newcomers swamped the older coastal inhabitants, both the "Thule" people and their own kinsmen of the "Dorset" culture, until they held undisputed sway from Coronation Gulf to Labrador. A few descendants of the "Thule" people managed to survive on Southampton Island until the beginning of the twentieth century, but the "Dorset" Eskimo, or at least their culture, disappeared completely before the arrival of Europeans, even in Newfoundland. Meanwhile, the rising islands in the far north shuffled off the seal- and whale-hunting population they had gained so short a time before.

The majority of these natives made their way to Greenland, where they may have assisted in overwhelming the settlements of the early Norsemen; others, perhaps, retreated to the mainland, only to be submerged by the tide of Eskimo from the interior. . . .

We are now in a position to understand why the present-day Eskimo of Canada fall naturally into three divisions. The natives in Mackenzie River delta (and, until 1902, the inhabitants of Southampton Island also) descend from some of the old "Thule" people who migrated from their Alaskan home to the eastern Arctic 1,000 or more years ago, dropping colonies all along their route; on the Barren Grounds behind Hudson Bay the primitive "Caribou" Eskimo, numbering in 1923 less than 500, represent the survivors of the second great reservoir of the race—the inland Eskimo, now shrunken to a fast vanishing pool; and occupying the whole coast-line from Coronation Gulf to Labrador are the Eskimo who flowed out of this inland reservoir about A.D. 1200, overwhelmed the earlier coast-dwellers, and in their new environment gained a fresh lease of life and vigour (1937, pp. 34–35).

This theory, as presented by Jenness, and intended primarily to apply to the Canadian Eskimo, is not complete without some reference to the work of Collins in Alaska (1937a). The work in this area has revealed cultural stages (Punuk, Birnirk, Old Bering Sea) preceding and presumably ancestral to the Thule. In addition, Collins has presented evidence of a late return movement of Thule people into Alaska (1937b). In general, however, the theory stated by Jenness, particularly as applying to the eastern Arctic, may be accepted for working purposes.

On the grounds of culture successions, therefore, it seems best to assume two reservoirs of population at the beginning of the Christian era: one in Alaska and one in the central Arctic. Presumably, also, since these two bodies of Eskimos have so much in common culturally, they must have been united at some earlier time, but certainly before the development of the earliest culture thus far recognized—the old Bering Sea culture. Mathiassen (1936) and Collins (1937a) have suggested that the early Central, or Dorset, group of Eskimo may have been of Indian origin. Collins says:

One of the most important problems of Arctic archeology is that of the origin and relationships of the Dorset culture . . . . Its peculiar art is to a certain extent suggestive of the earliest phase of Old Bering Sea art, and it likewise resembles the old Alaskan culture in its highly developed stone chipping technique. It cannot have been derived from the Old Bering Sea culture as we know it, however, for the latter is already in many respects a highly developed Eskimo culture, possessing numerous important features of which the Dorset culture had no knowledge.

As Jenness has pointed out, the Dorset culture shows unmistakable Indian affinities, particularly with the Beothuk and the prehistoric "Red Paint" culture. Jenness has suggested that since the Dorset culture preceded the

> Thule, it may have been derived from that of the Caribou Eskimos. In view of the divergence of the Dorset culture from Eskimo culture generally and its rather close relationship to that of the Indians, it would seem that its origin might with equal propriety be sought in the latter direction; in which case we would suppose the Dorset to have been an originally Indian culture, which before the spread of the Thule culture to the central regions, had gradually worked northward; later, with the advent of the Thule Eskimos, the Dorset peoples would be forced to give way, and gradually succumb to the better equipped and more aggressive newcomers from the west. This, of course, is only speculation. . . (p. 373).

SIGNIFICANCE OF THEORIES TO PHYSICAL ANTHROPOLOGY

From the foregoing, it appears that in order to interpret fully the Labrador physical type in terms of Eskimo origins and migrations some knowledge is necessary of at least the Thule and Dorset physical types, in addition to those of recent eastern groups. This goal is impossible at the present time because no Dorset skeletal remains have as yet been identified. Nevertheless, according to Jenness' theory, we still have, in the Thule and modern Eskimos, representatives of the two earlier reservoirs of population. Since the Thule physical type has been identified only during the past year (Fischer-Møller, 1937) it is now possible for the first time to carry out even to this extent the comparisons suggested by the theories of migration.

Another archaeologically identified physical type, and older even than the Thule, is that of the "Old Igloo" (Birnirk) remains from Point Barrow, Alaska, described by Hrdlička (1930; see also Collins, 1934). It is desirable to compare this and the Labrador series because of the contradictory opinions held regarding the physical affiliations of the "Old Igloos." Thus, Hrdlička says (1930, p. 323), in speaking of the skull: "It is the Labrador-Greenland type throughout. . . ."; whereas Seltzer, although mistaking the "Old Igloos" for Thule people, and apparently thinking only of the living Labrador Eskimo, says (1933, p. 357): "The present Labrador Eskimos do not resemble the Old Igloo Thulers." Except for contributing fuller evidence toward this controversial matter, there seems to be little reason, on the basis of Jenness' theory, for expecting to find unchanged representatives of the Birnirk people in the eastern Arctic.

It should be added also that these theories of Eskimo migrations, while helpful in directing anthropometric comparisons, necessarily do not indicate how completely the people of one culture phase have displaced or absorbed those of another. The skeletal remains may be the only clue to this. However, in view of the isolation and inbreeding of such relatively small groups, and unless fairly distinct

physical types are represented in the bearers of the different cultures, the results of physical anthropology alone are not likely to be conclusive in establishing the course of events.

THE INDIANS

Relatively little is known regarding the early history of the Montagnais-Naskapi Indians. The early records have been summarized recently (1931) by Speck, from whose writings the following is extracted:

> Evidence of an eastward drift of Indian tribes, known as Montagnais, along the St. Lawrence coast of the peninsula occurs as early as the seventeenth century in the Relations of the Jesuits. This evidence has been accepted without question by most historical authors . . . . Since there is little reason to doubt its correctness, we may next seek for more knowledge respecting the time and extent of the movement, and of the forces behind it. The sources generally agree in ascribing one such force to the Iroquois. . . .
>
> At the time of the arrival of the French in lower Canada the Montagnais were apparently located *en masse* in the territory north of the St. Lawrence between Quebec and the Saguenay inland to Lake St. John, and eastward to Moisie River and Seven Islands, and the waters inland to the Height of Land. At this time we do not hear much of any people residing north and east of them. With the subsequent expansion of French trading stations and mission influence, we hear of the Montagnais working eastward along the coast to Blanc Sablon. . . (p. 561).
>
> The eastward migration of Montagnais is a matter of convincing certainty from published records, showing that from Mingan eastward, and from perhaps still farther toward the mouth of the St. Lawrence, the so-called Montagnais were urging their hunting and trading down into the Gulf coast, keeping pace with the retreat or annihilation of the Eskimo, even actually pushing them onward. This move correlates with the reasonable supposition of the eastward and northward drift of the Naskapi, resulting in the peopling by Algonkian-speaking Indians of the interior plateau and the coast—a process by the present time nearly complete; but not quite so in view of the still uninhabited peninsula west of Ungava Bay [see Map]. I have only hinted at the possibilities here, for we are as yet woefully ignorant of what will be disclosed by archaeological investigation (p. 564).

Thus, although the contact between the Indian and Eskimo in Labrador appears to be of rather recent date, it is important to keep in mind the fact that both groups migrated there from farther west and that a remote relationship has been suggested (cf. Strong, 1930, p. 142). Mathiassen's and Collins' speculations as to the possible Indian origin of the Dorset culture have already been discussed. Shapiro (1931, 1934) has gone further and made anthropometric comparisons between modern Eskimo, Chipewyans, and Hurons. The linkage of the Chipewyans, Cree, and Eskimo has been confirmed

by Seltzer (1933). Shapiro has theorized on the basis of his anthropometric findings thus:

> The Thule type, composed of the Old Igloo and the Angmagsalik series, is, on the evidence of the Old Igloo dating, identifiable with the Thule period. Apparently, this type was once spread from Alaska to Greenland as a remarkably stable and uniform population. Coming from the south, a population of Indian origin absorbed and in part replaced the Thule people. In the west the newcomers emerge as the type I have named Seward-Barrow . . . . The Indians who best represent the original stock are Athabascan Chipewyans and the Algonkian Cree and Iroquoian Huron. These three Indian groups appear to have a common bond in their conformity to the Algonkin type.
>
> The eastern Eskimos, successors of the Thule type in Greenland and Labrador, appear in some respects to be a blend between the old Thule people and the invaders of Indian origin. Another suggestion which must await ampler data points to the eastern Algonkin as a possible source for the newcomers in the eastern Eskimo area (1934, pp. 2731–2732).

Discussion of these theories is best postponed until the present evidence is presented. However, I would point out here that Shapiro and Seltzer, like many others, have been misled by a mistaken identification of the Old Igloo remains, which are pre-Thule, as Collins (1934) has clearly shown.

III. ANALYSIS OF METRICAL AND NON-METRICAL OBSERVATIONS ON ESKIMO SKELETAL REMAINS

Methods

Circumstances usually determine the pattern assumed by a study of this nature. Although it is generally desirable to place on record a large body of measurements and observations for future reference, there is a lack of accord among physical anthropologists as to the items that should receive attention. Needless to say, the possible measurements or observations are innumerable. However, unless the material is permanently at hand, and time is plentiful, this course is not always possible.

In the present case, the study of the skeleton was undertaken initially to facilitate analysis of meager data on the living. Also, the author had to go to Chicago and Cambridge to measure the material, and could spend only a few days at each place. These circumstances were sufficient to limit the records to essentials. The decision as to the essential measurements depended upon those available for comparison.

In making comparisons of the skeletal measurements I have been guided by three considerations: (1) That the Labrador Eskimos are usually grouped with those of Greenland as the "eastern long heads"; (2) that in a search for relationships primary attention should be given to archaeologically established groups, as discussed in the preceding chapter; and (3) that, because of the high degree of homogeneity among the Eskimos, the factor of personal error should be held to a minimum.

The following circumstances favor these desiderata: My training in anthropometry has been almost entirely under the influence of Dr. Hrdlička and as a result we accord very well in our anthropometric technique, as will be shown below. It happens also that Dr. Hrdlička has reported (1924, 1930) on one of the best series of Greenland skulls available—for the most part collected by Hayes in 1860–61 and described (without sexing) by Bessels in 1875. Furthermore, Dr. Hrdlička has measured skeletal remains of the only two early Eskimo types thus far identified archaeologically: (1) the Barrow "Igloos" (1930), and (2) the "Thule" of the central Arctic regions (Southampton Island, 1910). These groups permit a very broad comparison in which the personal error can be evaluated. Fischer-Møller (1937) has extended the series of known "Thule"

remains; his data are too important to omit. For further comparison the reader is referred to Dr. Hrdlička's Alaskan survey of 1930.

The restricted number of measurements here reported, as dictated by circumstances and the comparative data, still include the more significant figures, and almost all of those available for the groups mentioned above. The technique of measurement used by the author is that described by Hrdlička (1920). Minor exceptions will be explained in the appropriate places.

I have subjected the data to a minimum of metrical analysis, but sufficient, I believe, to enable others to check the validity of the conclusions. Moreover, by giving the basic data in detail in the form of appendices, it is possible for others to amplify this phase of the study. Having at my disposal, through the kindness of Dr. Hrdlička, most of the original records for the comparative series, I have extended the same statistical treatment to these.

The formulae involved are available in any standard work on statistics. In calculating probable errors of the means and standard deviation I have relied upon Pearson (1914). Because the labor involved is not proportional to the return, I have not employed statistics in series of less than 20.

PERSONAL ERROR

As already stated, it is desirable to reduce personal error to a minimum in anthropometric records, and especially in those pertaining to Eskimos. To this end fairly precise directions have been formulated and are to some extent the subject of international agreements. Nevertheless, error is still introduced into these records chiefly in the matter of sexing and through differing interpretations of landmarks that require some judgment as to location. In addition there is the possible instrumental error that may either add to or compensate for unconscious bias in technique.

As is well known, the difficulty of an experienced observer in sexing skeletal material varies both with the completeness of the skeleton and with the particular parts preserved. When the entire skeleton is available, the accuracy of sex identification is high; when the pelvis is missing, this accuracy diminishes considerably; and in that small group of large females resembling weak males (and vice versa), the chance of accurate sex identification, without the aid of the pelvis, is about fifty-fifty. This problem, so far as the Eskimo is concerned, has been emphasized by Morant (1926) in commenting upon his coefficients of racial likeness for Greenland crania as cal-

culated from the records of Hrdlička (1924) and Fürst and Hansen (1915):

> So there is sufficient statistical justification for considering that the two series of male means represent samples drawn from identically the same population. The female indices are also in perfect accord, but nearly all the female direct measurements show differences that are just significant, Fürst and Hansen's means being greater than the corresponding ones given by Hrdlička. The discordance is evidently not symptomatic of a racial difference. The difficulty of sexing their material was stressed by the writers of the *Crania-Groenlandica* (see p. 56) and by others who have examined Eskimo crania. The observed differences between the means are evidently due to inaccurate sexing and we are inclined to accept as accurate the determinations of the Professors of Anatomy in the Universities of Lund and Copenhagen on account of their wider acquaintance with the racial type, the fact that they were helped in many doubtful cases by an examination of the pelvis and that their male and female distributions of characters are closely fitted by normal curves (p. 260).

That Morant's confidence in the superior sexing ability of Fürst and Hansen is somewhat in the nature of wishful thinking, appears from an examination of the quotation referred to:

> If in certain cases there can be no doubt as to the sex of the cranium, there are *many* instances in which it is very difficult, *not to say impossible*, to assign a skull with certainty to one or the other sex. . . . Still it should be added that, in seemingly doubtful cases, the diagnostic of *several* crania could be later on confirmed by the pelvis and in *rare* cases by grave findings (p. 56; italics mine).

It is hardly to be expected that even the most experienced of observers will agree entirely on the sex of a series of crania. In this connection I am able to present some interesting data on the error due to sexing. The series of Greenland crania measured by Hrdlička (1924; re-examined for the 1930 report), as already indicated, is made up for the most part of the Hayes collection (expedition of 1860–61 to the Greenland side of Smith Sound near Etah), acquired through the Army Medical Museum (see Otis catalogues 1876, 1880; Nos. 1182–1253). This is part of the famous series measured, but unsexed, by Bessels (1875). Otis records the same measurements as Bessels (with only one exception, so far as I can discover: 1250-C63), and adds the sex. Since the original numbers are still visible on most of the skulls it is possible to correlate the records of Bessels, Otis, and Hrdlička.

The Hrdlička 1924 series includes 55 skulls of the Hayes collection; the 1930 series 62. Of the 55 common to both series all but four agree as to sex; at the re-examination three were changed from male to female; one from female to male. Of the 62 in common to the Hrdlička 1930 and the Otis series, 44 are of the same sex; 18 have been considered female by Hrdlička and male by Otis.

The personal error of these same observers due to other factors can also be determined by combining the sexes. Unfortunately, there are only two measurements which are both comparable and common to the various series: length of skull and breadth of face (bizygomatic diameter). Bessels confined his measurement of skull breadth to the parietals,[1] whereas Hrdlička has recorded the maximum. With this fact in mind I will include this measurement also. Combining the two sexes, I find that the 62 skulls measured by Hrdlička (1930) and Bessels have identically the same average length; the average breadth differs by 1.3 mm. (in favor of Hrdlička) as might be expected from the above explanation; and the face breadth (obtained on 51 specimens) differs on the average by only 0.2 mm. (in favor of Bessels). I would conclude, therefore, that where the measurement is defined in the same way, the error from technique is negligible.

We may now consider the effect of these combined errors on the averages of the respective series (Table 1). It will be seen that the tendency has been to decrease the number of males and increase the females; in other words, skulls have been removed from the lower range of the males and added to the upper range of the females. Since the decision for this change, lacking the pelvis, rests primarily upon the size of skull, the effect upon the averages has been to increase those of both the males and females. Thus it appears from the males at least that an error of 3 mm. or more can result in a small series from errors of sexing.

TABLE 1.—THREE INDEPENDENT OBSERVATIONS ON THE SAME SERIES OF GREENLAND CRANIA: EXAMPLE OF ERROR DUE TO SEXING

(*In millimeters*)

Observer	Males	Females
	Length maximum(54)	
Otis(Bessels)	(41)186.4	(13)180.8
Hrdlička (1924)	(28)189.5	(26)180.6
Hrdlička(1930)	(26)189.4	(28)181.3
	*Skull breadth(50)**	
Otis(Bessels)	(39)132.2	(11)126.2
Hrdlička(1924)	(26)134.8	(24)129.5
Hrdlička(1930)	(24)135.2	(26)129.6
	Bizygomatic diameter(35)	
Otis(Bessels)	(27)136.3	(8)128.6
Hrdlička(1924)	(17)139.0	(18)128.0
Hrdlička(1930)	(15)140.7	(20)129.7

* Bessels by definition limits this measurement to the parietals; Hrdlička takes the maximum. In 62 specimens (sexes combined) the difference in method favors Hrdlička to the extent of 1.3 mm.

[1] Fürst and Hansen, evidently not aware that Bessels defined his measurement of breadth differently, conclude that the average breadth increases from north to south in Greenland.

The results of two observers measuring the same collection, and thereby showing their personal error, are not often available. For this reason, and in order that due consideration may be given to this factor in the present analysis, I give two more examples, this time involving myself.

The first of these examples (Table 2) shows my findings on the Peabody series of Labrador Eskimo skulls in relation to the published results of Russell and Huxley (1899) on the same collection. Two factors of uncertainty enter into this table; namely, that it is impossible now to determine (1) how many individuals were measured originally, and (2) how they were sexed. For the most part the differences in the results are probably due to sexing. Nevertheless, the numbers of individuals are large enough, and the results for the two sexes are consistent enough, to justify the conclusion that at least some of the major differences are due to technique. Table 2 shows that in general I tend to get slightly smaller measurements than did Russell and Huxley. However, three measurements yielding pronounced differences are emphasized: (1) diameter lateral maximum, (2) alveolar point-nasion height, and (3) orbital breadth. These differences are best discussed in the light of the second example.

TABLE 2.—INDEPENDENT MEASUREMENTS OF THE SAME SKULLS
PEABODY SERIES (LABRADOR)*
(*In millimeters*)

	Male			Female		
Measurements	Russell and Huxley (13?)	Stewart (14)	Dif.	Russell and Huxley (15?)	Stewart (21)	Dif.
Diam. ant.-post. max.	189.2	188.5	−0.7	179.6	179.4	−0.2
Diam. lateral max.	136.2	134.4	**−1.8**	129.9	128.2	**−1.7**
Basion-bregma height	136.0	135.4	−0.6	130.4	127.8	−2.6
Diam. frontal min.	93.9	93.6	−0.3	90.4	89.5	−0.9
Menton-nasion height	125.0	123.3	−1.7	113.3	113.4	+0.1
Alv. pt.-nasion height	72.3	74.4	**+2.1**	65.5	68.8	**+3.3**
Diam. bizyg. max.	138.1	136.9	−1.2	128.5	127.9	−0.6
Basion-nasion	104.1	102.8	−1.3	97.6	97.7	+0.1
Basion-alveolar point	100.9	102.1	+1.2	96.8	96.5	−0.3
Orbital height, mean†	37.1	36.0	−1.1	34.6	34.4	−0.2
Orbital breadth, mean†	42.4	40.1	**−2.3**	39.7	37.8	**−1.9**
Nasal height	52.7	52.3	−0.4	49.4	48.6	−0.8
Nasal breadth	22.7	22.4	−0.3	21.8	21.6	−0.2
Alveolar length	54.5	54.3	−0.2	51.1	52.2	+1.1
Alveolar breadth	64.1	63.2	−0.9	61.2	62.0	+0.8

* See Appendices A1–3 (old stone grave series) for details.
† The mean is assumed for the data of Russell and Huxley.

In order to show how my results check with Dr. Hrdlička's, I measured 30 of the Greenland and Igloo skulls reported by him in 1930. The comparison, disregarding sex, is shown in Table 3. Again I more frequently get lower averages, but near agreement is the rule,

with the exception of diameter lateral maximum and nasal height. Only the first of these two exceptional measurements is common to the two examples; in both cases I have gotten a smaller figure for head breadth. Since we are all seeking maximum breadth, and since neither Dr. Hrdlička nor I take this measurement on the temporal crest, the difference would seem to reside in my greater conservatism in estimating the flare of the temporal squama, for the maximum very often coincides with the edge of this structure in Eskimos.

TABLE 3.—INDEPENDENT MEASUREMENTS OF THE SAME SKULLS
NATIONAL MUSEUM SERIES*
(*In millimeters*)

Measurements	Hrdlička (30)	Stewart (30)	Dif.
Diam. ant.-post. max	186.3	185.7	−0.6
Diam. lateral max	133.8	132.6	−1.2
Basion-bregma height	136.0	135.6	−0.4
Alv. pt.-nasion height	73.9	73.3	−0.6
Diam. bizyg. max	137.6	137.3	−0.3
Basion-nasion	104.5	104.7	+0.2
Basion-alveolar point	104.3	104.0	−0.3
Orbital height, mean	35.4	35.2	−0.2
Orbital breadth, mean	39.4	39.5	+0.1
Nasal height	51.4	52.2	+0.8
Nasal breadth	22.9	23.0	+0.1
Alveolar length	55.2	54.7	−0.5
Alveolar breadth	64.4	64.0	−0.4

* Mostly Greenland; sexes combined.

Morant (1937) has pointed out (p. 4) that between 1924 and 1930 Hrdlička seems to have changed his technique of measuring upper face height and nasal height. I am unable to learn whether Hrdlička changed his method of taking upper face height during this period, although it is certain that his present practice of locating alveolar point differs somewhat from the definition appearing in his "Anthropometry" (1920, p. 16, item 12). Because the point on the alveolar border between the two upper median incisors is so easily altered by absorption of the bone following tooth loss, and also since this point is not always the lowest point on the border even when the teeth are present, Hrdlička estimates the position of the point in these cases so as to bring it into alignment with the points between the upper median and lateral incisors. Thus, a slightly larger measurement results, and some approximate measurements are included.

As regards nasal height, it can be shown that Hrdlička changed the definition of the inferior nasal landmark following his experience (1925) in measuring Australian skulls:

> In Australia considerable difficulty was encountered with the measurements of the face and nose. . . . With the nose . . . the difficulty lay in the peculiarity of the lower border of the aperture. In many cases there was found

> a double inferior border, a higher internal and a lower external one, with a depression (prenasal fossa) between; or there was but the higher border, the lower one being indistinct. The proper measurement of the nasal height, it was determined, is to the level of the upper border, which is also the level of the nasal floor. . . (1928, p. 2).

Previously (1920, p. 16, item 13) he had recommended measuring "to the upper limiting line of the gutters." Thus the measurement has been shortened.

Until engaged in the present investigation of personal error I did not realize that I was still following Hrdlička's earlier definition. In pursuing this policy, which has given results similar to those of Russell and Huxley, I have often compromised by measuring to the crista spinalis of Gower (1923).

The considerable difference in orbital breadth obtained by Russell and Huxley and by myself is due mostly of course to the use of different landmarks medially. Dr. Hrdlička now uses lacrimale almost, if not entirely, and I follow his example. It seems obvious that Russell and Huxley have used dacryon or maxillo-frontale. It is unfortunate that this measurement is so seldom defined.

MEASUREMENTS OF THE SKULL: OLD STONE GRAVE SERIES

It is desirable that we consider first the oldest known physical remains of the Labrador Eskimo. Thus the data on the skeletal material will be analyzed before those on the living, and the "old stone grave" series of skeletons before the "recent grave" series. In this way only is it possible to detect and interpret changes in the physical type.

AGE

I have very little confidence in rules for aging the skull, particularly in a group such as the Eskimo, hence only three broad age periods are recorded here. On this basis the only difference in age distribution between the two sexes is the greater number of young adults among the females. Combining the two sexes (55), one-quarter (25.4 per cent) are found to be old (50 years or over), 36.4 per cent middle-aged (35–50 years), and 38.2 per cent young (up to 35 years). There is no reason to believe, therefore, that this series includes an unusual representation of either immature or senile individuals.

THE VAULT

Diameter Antero-Posterior Maximum (Tables 4, 5).—In the four groups here compared this diameter is smallest in Labrador, but the difference in size is statistically significant only in relation to the

TABLE 4.—STATISTICAL CONSTANTS OF MEASUREMENTS OF THE VAULT: MALES

Group	No.	Range	Mean ±p.e.	S.D. ±p.e.	C.V. ±p.e.	×p.e.
			Diameter antero-posterior maximum			
Labrador*..	38	171–202	187.66±0.75	6.83±0.53	3.64±0.28	....
Thule†.....	21	179–204	189.43±0.89	6.07±0.63	3.20±0.33	1.52
Greenland‡.	49	175–202	189.67±0.55	5.75±0.39	3.03±0.21	2.72
Old Igloo‡.	30	180–208	192.93±0.75	6.09±0.53	3.16±0.28	**4.97**
			Diameter lateral maximum			
Labrador...	34	128–144	134.62±0.51	4.41±0.36	3.28±0.27	....
Thule......	21	131–144	138.67±0.50	3.38±0.35	2.44±0.25	**5.70**
Greenland..	49	126–146	136.10±0.45	4.67±0.32	3.43±0.23	2.18
Old Igloo..	30	126–140	132.77±0.46	3.76±0.33	2.84±0.25	2.68
			Basion-bregma height			
Labrador...	31	128–145	136.00±0.50	4.14±0.35	3.05±0.26	....
Thule......	21	133–146	139.43±0.54	3.68±0.38	2.64±0.28	**4.63**
Greenland..	49	128–148	139.53±0.41	4.28±0.29	3.07±0.21	**5.43**
Old Igloo..	30	134–147	140.40±0.45	3.63±0.32	2.58±0.22	**6.57**
			Cranial index			
Labrador...	34	64.5–77.9	71.80±0.34	2.93±0.24	4.08±0.33	....
Thule......	21	68.5–78.2	73.24±0.42	2.86±0.30	3.90±0.41	2.67
Greenland..	49	65.3–78.6	71.74±0.31	3.18±0.22	4.43±0.30	0.13
Old Igloo..	30	62.0–75.0	68.80±0.38	3.09±0.27	4.49±0.39	**5.88**
			Length-height index			
Labrador...	31	67.4–79.2	72.52±0.34	2.77±0.24	3.82±0.33	....
Thule......	21	66.2–79.2	73.72±0.45	3.04±0.32	4.12±0.43	2.14
Greenland..	49	67.4–80.0	73.55±0.26	2.72±0.18	3.70±0.25	2.40
Old Igloo..	30	65.9–78.9	72.83±0.36	2.89±0.25	3.96±0.34	0.62
			Breadth-height index			
Labrador...	27	92.8–110.2	101.11±0.55	4.25±0.39	4.21±0.39	....
Thule......	21	95.0–106.8	100.52±0.46	3.13±0.32	3.11±0.32	0.82
Greenland..	49	92.3–115.9	102.57±0.46	4.72±0.32	4.61±0.31	2.03
Old Igloo..	30	98.5–114.0	105.73±0.46	3.78±0.33	3.57±0.31	**6.42**
			Mean height index			
Labrador...	27	78.1–90.3	84.44±0.37	2.83±0.26	3.36±0.31	....
Thule......	21	78.5–89.8	84.95±0.42	2.82±0.29	3.32±0.34	0.91
Greenland..	49	79.0–92.1	85.57±0.27	2.85±0.19	3.33±0.23	2.46
Old Igloo..	30	80.0–92.2	86.23±0.34	2.76±0.24	3.21±0.28	**3.58**
			Cranial module			
Labrador...	27	145.0–158.3	152.70±0.39	3.04±0.28	1.99±0.18	....
Thule......	21	152.0–161.7	155.72±0.43	2.95±0.31	1.89±0.20	**6.42**
Greenland..	49	147.7–163.0	155.10±0.30	3.14±0.21	2.02±0.14	**4.90**
Old Igloo..	30	150.0–160.7	155.40±0.34	2.75±0.24	1.77±0.15	**5.19**

* See Appendix A1: old stone grave series.
† Fischer-Møller (1937), Hrdlička (1910).
‡ Hrdlička (1930).

Old Igloo males. The shortness of this diameter in the Labrador group, allowing for a slight personal error, and in view of the low cranial index (males 71.8, females 72.2), suggests a smaller skull.

Diameter Lateral Maximum (Tables 4, 5).—Allowing for a possible personal error of 1 mm., the breadth of the skull in the Labrador group is seen to approximate that for Greenland, to be less than that

TABLE 5.—STATISTICAL CONSTANTS OF MEASUREMENTS OF THE VAULT: FEMALES

Group	No.	Range	Mean ±p.e.	S.D. ±p.e.	C.V. ±p.e.	×p.e.
Diameter antero-posterior maximum						
Labrador*	37	169.0–190.0	179.62±0.55	4.99±0.39	2.78±0.22	....
Thule†	10	172.0–194.0	181.80	....	....	....
Greenland‡	52	165.0–193.0	180.44±0.50	5.33±0.35	2.96±0.20	1.11
Old Igloo‡	31	170.0–190.0	180.84±0.70	5.80±0.50	3.21±0.28	1.37
Diameter lateral maximum						
Labrador	32	116.0–135.0	129.09±0.49	4.14±0.35	3.21±0.27	....
Thule	10	129.0–142.0	135.10	....	....	....
Greenland	52	120.0–139.0	129.85±0.39	4.20±0.28	3.24±0.21	1.21
Old Igloo	31	116.0–138.0	127.94±0.54	4.45±0.38	3.48±0.30	1.58
Basion-bregma height						
Labrador	34	121.0–139.0	128.97±0.53	4.60±0.38	3.57±0.29	....
Thule	9	131.0–139.0	135.66	....	....	....
Greenland	52	124.0–140.0	131.23±0.36	3.90±0.26	2.97±0.20	**3.53**
Old Igloo	30	120.0–140.0	133.37±0.48	3.90±0.34	2.93±0.25	**6.11**
Cranial index						
Labrador	31	66.3–75.8	72.16±0.32	2.69±0.23	3.73±0.32	....
Thule	10	69.6–78.6	74.34	....	....	....
Greenland	52	67.0–83.0	71.94±0.27	2.92±0.19	4.07±0.27	0.52
Old Igloo	31	66.3–76.5	70.74±0.31	2.53±0.22	3.57±0.31	**3.23**
Length-height index						
Labrador	33	64.9–76.8	71.85±0.34	2.94±0.24	4.10±0.34	....
Thule	9	70.6–77.5	74.93	....	....	....
Greenland	52	67.0–79.4	72.81±0.24	2.57±0.17	3.53±0.23	2.28
Old Igloo	30	69.8–78.0	73.77±0.26	2.12±0.18	2.88±0.25	**4.46**
Breadth-height index						
Labrador	29	92.6–110.3	100.14±0.53	4.26±0.38	4.25±0.38	....
Thule	9	95.1–105.4	100.13	....	....	....
Greenland	52	94.0–109.4	101.04±0.33	3.56±0.24	3.52±0.23	1.45
Old Igloo	30	98.5–112.3	104.23±0.48	3.90±0.34	3.74±0.32	**5.68**
Mean height index						
Labrador	28	77.7–88.5	83.79±0.38	2.99±0.27	3.57±0.32	....
Thule	9	81.3–88.9	85.79	....	....	....
Greenland	52	79.7–91.0	84.60±0.23	2.49±0.16	2.94±0.19	1.84
Old Igloo	30	81.0–91.3	86.10±0.31	2.53±0.22	2.94±0.26	**4.71**
Cranial module						
Labrador	28	139.3–151.0	145.32±0.40	3.13±0.28	2.15±0.19	....
Thule	9	146.0–155.7	150.72	....	....	....
Greenland	52	140.7–154.3	147.15±0.31	3.28±0.22	2.23±0.15	**3.59**
Old Igloo	30	136.0–154.0	147.47±0.47	3.84±0.33	2.61±0.23	**3.47**

* See Appendix A1: old stone grave series.
† Fischer-Møller (1937), Hrdlička (1910).
‡ Hrdlička (1930).

for the Thule, and greater than that for the Old Igloos. This same relationship may be noted in the cranial indices. Still allowing for personal error, the differences in head breadth appear to be significant both with the Thule and the Igloos.

Basion-Bregma Height (Tables 4, 5).—This diameter in the Labrador series is well below that of any of the other three groups

compared, and the difference is significant in each case. The indication is the same for the males and females. Since this diameter in the Labrador series is only absolutely and not relatively low (see mean height index) a small skull is again indicated.

Cranial Index (Tables 4, 5).—Considering that personal error as regards skull breadth in the Labrador series may raise the cranial index slightly, it appears that Labrador is intermediate between the other two dolichocranic groups, Thule and Greenland. The Igloos show a lower index even than Greenland, the males being hyperdolichocranic. The indications are the same for the two sexes, except that as usual the index for the females is slightly higher.

Height Indices (Tables 4, 5).—The relation of length and breadth to height of skull is summarized in the "mean height index." Relative to length there is little difference between the groups; but a great difference exists relative to breadth, especially between Labrador and the Igloos. The result is that the highest mean height index is to be found in the Igloos, with Greenland, Thule, and Labrador following next in order. The difference between Labrador and the Igloos is probably significant.

Cranial Module (Tables 4, 5).—Summarizing the three main diameters of the skull, it is not surprising, in view of the foregoing, that the lowest module is found in Labrador. Indeed, this module appears to be the lowest of any known Eskimo group, and certainly significantly different from any of the three groups used here in comparison. In other words, as indicated above, the Labrador Eskimos have comparatively small heads.

THE FACE

Diameter Frontal Minimum (Tables 6, 7).—Among the groups under consideration only the Thule supplies data on breadth of forehead for comparison with the Labrador group. Although this diameter is lower in the Labrador series, it is not significantly so.

Menton-Nasion Height (Tables 6, 7).—The frequent failure to secure the lower jaw with the skull makes it impossible to take this measurement in the majority of cases. Also, it is necessary to be somewhat cautious in interpreting the figures because tooth-wear lessens the diameter slightly. In general, however, a greater range is observable in both sexes of the Igloos, and the largest diameter on the average occurs among the Thule.

Alveolar Point-Nasion Height (Tables 6, 7).—This is a more reliable indicator of face height than the preceding measurement.

TABLE 6.—STATISTICAL CONSTANTS OF MEASUREMENTS OF THE FACE: MALES

Group	No.	Range	Mean ±p.e.	S.D. ±p.e.	C.V. ±p.e.	×p.e.
			Diameter frontal minimum			
Labrador*	31	90–106	95.32±0.43	3.59±0.31	3.76±0.32	....
Thule†	22	89–104	96.68±0.56	3.92±0.40	4.06±0.41	**1.92**
Greenland‡	..	.. ....	....	....	....	....
Old Igloo‡	..	.. ....	....	....	....	....
			Menton-nasion height			
Labrador	12	115–131	123.17	....	....	....
Thule	16	117–133	125.87	....	....	....
Greenland	12	111–134	123.83	....	....	....
Old Igloo	19	109–134	124.16	....	....	....
			Alveolar point-nasion height			
Labrador	32	69–80	74.25±0.38	3.18±0.27	4.29±0.36	....
Thule	18	71–80	76.50	....	....	....
Greenland	46	66–86	76.06±0.39	3.89±0.27	5.12±0.36	**3.35**
Old Igloo	27	71–84	77.04±0.39	3.00±0.28	3.89±0.36	**5.17**
			Diameter bizygomatic maximum			
Labrador	28	126–150	136.46±0.71	5.60±0.50	4.11±0.37	....
Thule	22	135–149	142.41±0.57	3.96±0.40	2.78±0.28	**6.54**
Greenland	47	129–151	140.47±0.54	5.51±0.38	3.92±0.27	**4.50**
Old Igloo	29	132–151	141.45±0.56	4.48±0.40	3.17±0.28	**5.54**
			Facial index total			
Labrador	10	82.0–95.3	89.61	....	....	....
Thule	16	78.5–97.8	88.22	....	....	....
Greenland	12	78.2–95.6	87.31	....	....	....
Old Igloo	19	76.8–96.2	87.40	....	....	....
			Facial index upper			
Labrador	27	50.7–59.4	54.68±0.29	2.27±0.21	4.16±0.38	....
Thule	18	47.7–58.5	53.66	....	....	....
Greenland	45	47.9–60.6	54.19±0.28	2.84±0.20	5.23±0.37	1.22
Old Igloo	27	50.0–58.3	54.56±0.31	2.42±0.22	4.44±0.41	0.28
			Basion-nasion			
Labrador	30	88–113	102.97±0.59	4.82±0.42	4.68±0.41	....
Thule	21	98–114	106.81±0.48	3.23±0.34	3.03±0.32	**5.05**
Greenland	48	100–115	106.04±0.34	3.49±0.24	3.30±0.23	**4.51**
Old Igloo	30	100–116	107.13±0.47	3.83±0.33	3.57±0.31	**5.55**
			Basion-alveolar point			
Labrador	28	93–111	101.57±0.55	4.31±0.39	4.24±0.38	....
Thule	8	103–114	107.62	....	....	....
Greenland	42	93–115	105.62±0.47	4.54±0.33	4.30±0.32	**5.62**
Old Igloo	23	95–114	104.83±0.63	4.47±0.44	4.26±0.42	**3.88**

* See Appendix A2: old stone grave series.
† Fischer-Møller (1937), Hrdlička (1910).
‡ Hrdlička (1930).

Considering that Fischer-Møller may have interpreted alveolar point differently, and more like Russell and Huxley (see p. 29), there is a possibility that the largest diameter occurs among the Thule. On the other hand, it is definite that the lowest diameter occurs in Labrador. In the males, at least, this figure is significantly different from those for Greenland and the Igloos.

TABLE 7.—STATISTICAL CONSTANTS OF MEASUREMENTS OF THE FACE: FEMALES

Group	No.	Range	Mean ±p.e.	S.D. ±p.e.	C.V. ±p.e.	× p.e.
			Diameter frontal minimum			
Labrador*	36	85–97	90.00±0.39	3.45±0.27	3.83±0.30	....
Thule†	10	93–102	96.30	....	....	....
Greenland‡	..	.. ...	....	....	....	....
Old Igloo‡	..	.. ...	....	....	....	....
			Menton-nasion height			
Labrador	11	109–123	116.09	....	....	....
Thule	3	117–123	119.67	....	....	....
Greenland	5	108–121	115.20	....	....	....
Old Igloo	19	98–124	114.10	....	....	....
			Alveolar point-nasion height			
Labrador	32	63–75	69.09±0.41	3.42±0.29	4.95±0.42	....
Thule	9	66–76	71.56	....	....	....
Greenland	45	61–78	70.51±0.35	3.47±0.25	4.93±0.35	2.63
Old Igloo	22	59–78	70.32±0.70	4.88±0.50	6.94±0.71	1.52
			Diameter bizygomatic maximum			
Labrador	27	120–136	128.33±0.57	4.40±0.40	3.43±0.31	....
Thule	9	127–143	135.67	....	....	....
Greenland	50	122–143	130.34±0.45	4.69±0.32	3.60±0.24	2.75
Old Igloo	29	117–139	130.86±0.61	4.90±0.43	3.74±0.33	3.05
			Facial index, total			
Labrador	8	84.7–96.8	89.39	....	....	....
Thule	3	86.2–87.9	86.93	....	....	....
Greenland	5	79.4–90.6	85.80	....	....	....
Old Igloo	19	76.0–96.1	88.22	....	....	....
			Facial index, upper			
Labrador	26	48.8–58.9	53.94±0.35	2.67±0.25	4.95±0.46	....
Thule	9	46.1–56.6	52.81	....	....	....
Greenland	45	47.9–60.8	54.17±0.31	3.07±0.22	5.67±0.40	0.41
Old Igloo	22	45.7–59.7	53.98±0.41	2.82±0.29	5.22±0.53	0.06
			Basion-nasion			
Labrador	35	87–107	98.11±0.55	4.79±0.39	4.88±0.39	....
Thule	9	100–107	103.00	....	....	....
Greenland	52	95–108	101.31±0.30	3.18±0.21	3.14±0.21	5.08
Old Igloo	30	95–109	101.70±0.47	3.80±0.33	3.73±0.32	4.99
			Basion-alveolar point			
Labrador	31	87–107	96.78±0.56	4.63±0.40	4.78±0.41	....
Thule	4	96–104	100.25	....	....	....
Greenland	45	93–110	100.93±0.45	4.50±0.32	4.46±0.32	5.76
Old Igloo	19	92–108	101.84	....	....	....

* See Appendix A2: old stone grave series.
† Fischer-Møller (1937), Hrdlička (1910).
‡ Hrdlička (1930).

Diameter Bizygomatic Maximum (Tables 6, 7).—Both from the range and from the average it appears that the narrowest face occurs in Labrador. On the same basis, the Thule have the broadest face. In the males the differences are significant in all cases.

Facial Indices (Tables 6, 7).—Because the trends are the same for length and breadth of face in the four groups, the relative pro-

portions are not very different; indeed, none of the differences is significant in the case of upper facial index.

Basion-Nasion (Tables 6, 7).—This diameter in the Labrador series is significantly smaller than in the three groups here used in comparison. This finding would be expected in view of the usual good correlation between basion-nasion and skull length, and the fact that absolute skull length is smallest in Labrador.

Basion-Alveolar Point (Tables 6, 7).—Here again this diameter is smallest in Labrador, and generally the differences between the Labrador series and the other groups are significant. This is the expected finding in accordance with basion-nasion and skull length.

THE ORBITS, NOSE, AND ALVEOLAR ARCH

Orbital Height, Mean (Tables 8, 9).—The means of this measurement for all four groups are very close, probably reflecting partly the accuracy with which it is usually taken.

Orbital Breadth, Mean (Tables 8, 9).—The fact that Fischer-Møller's measurements (Thule), as well as those from Labrador in the literature (see Appendix A3), all involve dacryon as the medial orbital landmark, whereas Hrdlička and I have used lacrimale, is reflected in the means. Thus, greatest orbital breadth occurs in the Thule, with Labrador next. It is likely, therefore, that none of the differences is significant.

Orbital Index, Mean (Tables 8, 9).—Keeping in mind the above statements regarding orbital breadth, it may be conceded that a higher index will result from the use of lacrimale than dacryon. Hence it would appear that there is even less difference between the groups than is indicated in the table.

Nasal Height (Tables 8, 9).—It has been pointed out in the discussion of personal error (p. 30) that I tend to get a larger figure for nasal height (by about 1 mm.) than Hrdlička. The fact that the mean for the Thule is considerably higher than those for the other groups, suggests that Fischer-Møller likewise takes a different point for the lower nasal border. Reducing the Labrador mean for the males to 51 mm. makes this the lowest of the four. By this change the $\times$p.e.'s for the Igloos and Greenland increase, but that for Greenland remains without statistical significance. The females show less marked differences.

Nasal Breadth (Tables 8, 9).—This diameter is not subject to personal error, hence the difference between the means of Labrador and the Igloos is noteworthy. Moreover, it accords with the signifi-

TABLE 8.—STATISTICAL CONSTANTS OF MEASUREMENTS OF ORBITS, NOSE, AND ALVEOLAR ARCH: MALES

Group	No.	Range	Mean ±p.e.	S.D. ±p.e.	C.V. ±p.e.	× p.e.
			Orbital height, mean ¶			
Labrador*..	29	32.5–40.8	36.02±0.21	1.68±0.15	4.66±0.41	....
Thule†.....	22	33.0–42.0	36.50±0.32	2.20±0.22	6.03±0.61	1.26
Greenland‡.	48	31.2–40.0	36.45±0.18	1.84±0.13	5.05±0.35	1.54
Old Igloo‡.	29	32.2–40.5	36.02±0.26	2.04±0.18	5.66±0.50	....
			Orbital breadth, mean ¶			
Labrador...	27	37.2–45.0	40.17±0.23	1.77±0.16	4.41±0.40	....
Thule......	22	38.2–45.0	41.18±0.24	1.66±0.17	4.03±0.41	**3.06**
Greenland..	48	38.0–44.5	39.93±0.12	1.19±0.08	2.98±0.20	0.92
Old Igloo..	29	37.2–42.5	39.83±0.16	1.32±0.12	3.32±0.29	1.21
			Orbital index, mean ¶			
Labrador...	27	82.3–100.0	89.52±0.51	3.92±0.36	4.38±0.40	....
Thule......	22	75.0– 98.7	88.68±0.88	6.12±0.62	6.90±0.70	0.82
Greenland..	48	79.1– 98.2	91.44±0.42	4.28±0.30	4.69±0.32	2.91
Old Igloo..	29	79.2– 98.8	90.34±0.56	4.45±0.39	4.93±0.44	1.08
			Nasal height			
Labrador...	31	48–58	52.42±0.29	2.43±0.21	4.64±0.40	....
Thule......	22	52–60	55.41±0.29	2.04±0.21	3.68±0.37	**7.29**
Greenland..	48	47–59	52.40±0.26	2.64±0.18	5.03±0.35	0.51
Old Igloo..	30	50–61	54.53±0.32	2.57±0.22	4.71±0.41	**4.91**
			Nasal breadth			
Labrador...	31	18–26	22.58±0.20	1.62±0.14	7.18±0.62	....
Thule......	22	22–26	23.00±0.17	1.21±0.12	5.25±0.53	1.62
Greenland..	48	20–26	22.69±0.16	1.60±0.11	7.04±0.48	0.42
Old Igloo..	30	20–28	23.90±0.21	1.68±0.15	7.03±0.61	**4.55**
			Nasal index			
Labrador...	31	32.7–50.0	43.10±0.47	3.89±0.33	9.02±0.77	....
Thule......	22	36.7–46.4	41.50±0.37	2.55±0.26	6.15±0.63	2.67
Greenland..	48	38.5–52.0	43.33±0.33	3.39±0.23	7.83±0.54	0.40
Old Igloo..	30	36.4–50.9	43.87±0.40	3.28±0.29	7.48±0.65	1.24
			Length of alveolar arch			
Labrador...	25	49–60	54.04±0.35	2.58±0.25	4.78±0.46	....
Thule......	17	50–62	56.06	....	....	....
Greenland..	44	45–62	56.30±0.32	3.20±0.23	5.68±0.41	**4.81**
Old Igloo..	26	50–63	55.73±0.35	2.62±0.25	4.71±0.44	**3.38**
			Breadth of alveolar arch			
Labrador...	22	57–68	63.86±0.41	2.86±0.29	4.49±0.46	....
Thule......	17	58–75	67.47	....	....	....
Greenland..	44	57–75	66.25±0.35	3.45±0.25	5.21±0.37	4.42
Old Igloo..	26	62–76	67.04±0.42	3.18±0.30	4.74±0.44	**5.39**
			Alveolar arch index			
Labrador...	22	110.0–136.7	118.45±0.98	6.82±0.69	5.75±0.58	....
Thule......	16	106.7–134.0	120.02	....	....	....
Greenland..	44	106.6–132.7	117.80±0.61	6.00±0.43	5.09±0.37	0.56
Old Igloo..	26	111.9–133.3	120.38±0.59	4.47±0.42	3.71±0.35	1.69

* See Appendix A3: old stone grave series.
† Fischer-Møller (1937), Hrdlička (1910).
‡ Hrdlička (1930).
¶ When only one orbit could be measured it has been included with the means.

TABLE 9.—STATISTICAL CONSTANTS OF MEASUREMENTS OF ORBITS, NOSE, AND ALVEOLAR ARCH: FEMALES

Group	No.	Range	Mean ±p.e.	S.D. ±p.e.	C.V. ±p.e.	×p.e.
Orbital height, mean ¶						
Labrador*	32	32.0–39.0	35.03±0.21	1.77±0.15	5.05±0.43	....
Thule†	9	32.0–39.0	36.22	....	....	....
Greenland‡	50	31.5–39.5	35.56±0.18	1.84±0.12	5.18±0.35	1.96
Old Igloo‡	25	32.0–37.5	35.00±0.24	1.77±0.17	5.06±0.48	0.09
Orbital breadth, mean ¶						
Labrador	31	35.0 –42.0	38.22±0.21	1.73±0.15	4.53±0.39	....
Thule	8	37.0 –43.0	39.75	....	....	....
Greenland	50	35.25–41.5	38.47±0.14	1.48±0.10	3.85±0.26	1.00
Old Igloo	25	33.5 –41.0	38.30±0.23	1.68±0.16	4.39±0.42	0.26
Orbital index, mean ¶						
Labrador	31	81.6–100.0	91.61±0.48	4.00±0.34	4.37±0.37	....
Thule	8	85.4–104.0	92.14	....	....	....
Greenland	50	85.1–102.1	92.40±0.41	4.28±0.29	4.63±0.31	1.25
Old Igloo	25	84.6– 99.3	91.40±0.57	4.26±0.41	4.66±0.44	0.28
Nasal height						
Labrador	34	43–57	49.00±0.32	2.73±0.22	5.58±0.46	....
Thule	9	48–56	51.44	....	....	....
Greenland	50	44–55	49.94±0.20	2.14±0.14	4.28±0.29	2.47
Old Igloo	26	44–58	49.96±0.44	3.34±0.31	6.67±0.62	1.78
Nasal breadth						
Labrador	32	19–27	21.91±0.22	1.84±0.16	8.42±0.71	....
Thule	9	20–26	22.44	....	....	....
Greenland	50	19–26	21.94±0.16	1.72±0.12	7.86±0.53	0.11
Old Igloo	26	18–27	22.54±0.26	1.98±0.18	8.80±0.82	1.86
Nasal index						
Labrador	32	38.0–52.9	44.88±0.48	3.99±0.34	8.89±0.75	....
Thule	9	39.3–51.0	43.67	....	....	....
Greenland	50	35.2–50.0	43.98±0.35	3.71±0.25	8.44±0.57	1.52
Old Igloo	26	37.7–59.1	45.35±0.68	5.17±0.48	11.39±1.07	0.57
Length of alveolar arch						
Labrador	28	48–56	51.82±0.29	2.25±0.20	4.35±0.39	....
Thule	7	51–58	54.43	....	....	....
Greenland	45	49–59	53.51±0.25	2.46±0.17	4.59±0.33	**4.45**
Old Igloo	20	50–58	53.60±0.39	2.60±0.28	4.84±0.52	**3.63**
Breadth of alveolar arch						
Labrador	25	54–67	61.80±0.46	3.40±0.32	5.51±0.52	....
Thule	7	63–70	65.28	....	....	....
Greenland	45	55–66	61.64±0.27	2.65±0.19	4.30±0.30	0.30
Old Igloo	20	56–70	63.15±0.51	3.37±0.36	5.33±0.57	1.96
Alveolar arch index						
Labrador	24	107.7–128.6	118.88±0.72	5.21±0.51	4.38±0.43	....
Thule	7	114.5–125.0	120.01	....	....	....
Greenland	45	105.2–127.4	115.27±0.56	5.54±0.39	4.81±0.34	**3.97**
Old Igloo	20	107.3–132.1	117.90±0.96	6.35±0.68	5.38±0.57	0.82

* See Appendix A3: old stone grave series.

† Fischer-Møller (1937), Hrdlička (1910).

‡ Hrdlička (1930).

¶ When only one orbit could be measured it has been included with the means.

cant difference in nasal height. In other words the Igloo Eskimos stand apart from those of Labrador in having larger mean nasal dimensions.

Nasal Index (Tables 8, 9).—Correcting for the personal error in taking nasal height, it still appears that, with the exception of the Thule (which are difficult to evaluate), there is little difference in relative proportions of the nose among the four groups.

Length of Alveolar Arch (Tables 8, 9).—Little difference, in the matter of interpreting landmarks, enters into the taking of this measurement. It is interesting, therefore, that the smallest figure occurs in the Labrador series. The difference is statistically significant, at least in the case of Greenland and the Igloos, and for both sexes.

Breadth of Alveolar Arch (Tables 8, 9).—Again the smallest figure is found in the male Labrador series, and in the females the figures for Labrador and Greenland are very close. The difference is significant only in the case of the male Igloos.

Alveolar Arch Index (Tables 8, 9).—With the exception of the female Greenland series, the relative proportions of the alveolar arch in all of the groups do not differ significantly from those of Labrador.

DISCUSSION

The position of the Labrador skulls in relation to those of the other three groups, here compared by metrical means, is conveniently shown by charting the ×p.e.'s (the number of times that a difference exceeds its probable error). It is customary to accept a difference which is three or more times its probable error as almost, or certainly, significant. In Figure 1 (p. 41) I have plotted the ×p.e.'s of the males, emphasizing statistical significance by a line at the level of three times the probable error. In calculating the differences the Labrador averages have been corrected for personal error to the extent that this is indicated in Table 3. The ×p.e.'s thus differ somewhat from those given in preceding tables.

It should be clear that the line connecting the ×p.e.'s of the Old Igloos is in general more often above the 3 line than either of the others. Also, the line showing generally the least significant differences (most often below the 3 line) is that for Greenland. From this it appears that of these three groups Greenland bears the closest metrical resemblance to Labrador.

This chart brings out the fact also that, although the measurements themselves differ considerably, their relationships, as expressed

by the indices, do not vary nearly as greatly. The Igloos are an exception as regards cranial index and breadth-height index. The explanation of this restriction of the differences to the absolute measurements seems to be that it pertains to general size; that is, the average Labrador skull is smaller than that of other Eskimo groups. The differences are so consistent and marked that one might justly suspect an instrumental error or some other such explanation before accepting their existence. However, the published

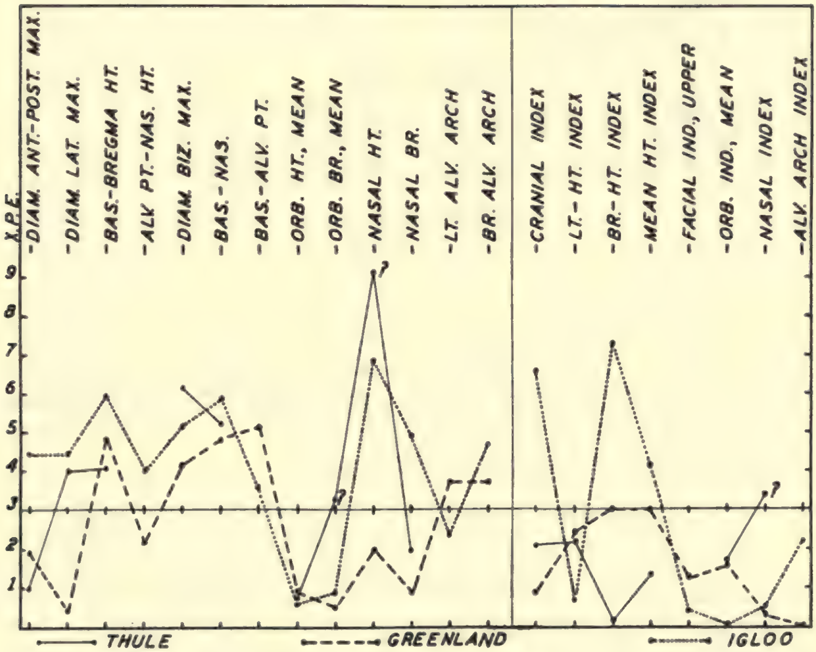

FIG. 1. Graph formed by connecting the $\times$ p.e.'s of various measurements and indices for three Eskimo groups as calculated against the Labrador group. All points above the horizontal line at the level of 3 $\times$ p.e. are considered statistically significant.

findings of Russell and Huxley (Table 2) on some of the same crania point in the same direction and the study of personal error (Table 3) rules out instrumental error.[1]

That the differences between the Labrador and Greenland groups are not dependent upon the particular Greenland series employed may be proved by making similar comparisons with the Fürst and

[1] In checking my results with Dr. Hrdlička's on the Greenland crania I used the same instruments with which the Labrador crania had been measured.

TABLE 10.—CRANIAL MEASUREMENTS DIFFERING SIGNIFICANTLY BETWEEN LABRADOR AND GREENLAND

Series	Mean ±p.e.	×p.e.
	Basion-bregma height	
Labrador	136.4±0.50	....
Greenland		
Hrdlička	139.5±0.41	4.82
Fürst and Hansen	138.2±0.24	3.21
	Bizygomatic diameter	
Labrador	136.8±0.71	....
Greenland		
Hrdlička	140.5±0.54	4.17
Fürst and Hansen	139.5±0.32	3.46
	Basion-nasion	
Labrador	102.8±0.59	....
Greenland		
Hrdlička	106.0±0.34	4.81
Fürst and Hansen	105.6±0.20	4.52
	Basion-alveolar point	
Labrador	101.9±0.55	....
Greenland		
Hrdlička	105.6±0.47	5.21
Fürst and Hansen	104.4±0.27	4.10

Hansen series. We are indebted to Morant (1926) for working out the biometric constants for this material. The measurements given in Table 10 are the only ones differing significantly and at the same time being wholly comparable by definition.

MEASUREMENTS OF THE SKULL: RECENT GRAVE SERIES

As pointed out in the introduction, the small group of individuals composing the recent grave series all received Christian burial during the middle of the nineteenth century. By thus representing, both in time and in the process of acculturation, an intermediate group between the old stone grave people (probably eighteenth century) and those who have been measured during life in recent times, they should indicate whether or not a physical change had taken place during this interval.

Table 11 gives the arithmetical means of both the recent and old stone grave series, male and female. Since only measurements taken by the author are here considered, the factor of personal error should be constant. The main physical changes indicated in this table may be summarized as follows: As compared to the pagans the Christians have shorter and smaller heads with longer and narrower faces, relatively higher orbits and relatively narrower alveolar arches.

TABLE 11.—COMPARISON OF MEASUREMENTS AND INDICES OF OLD STONE AND RECENT GRAVE SERIES*

Measurement or Index	Male Old (21)†	Male Recent (12)	Male Dif.	Female Old (30)	Female Recent (8)	Female Dif.
Diam. ant.-post. max.	188.0	185.7	−2.3	179.9	178.6	−1.3
Diam. lat. max.	134.9	134.4	−0.5	128.3	130.7	+2.4
Bas.-breg. height	135.5	134.1	−1.4	128.3	128.3	...
Cranial index	*71.8*	*72.6*	*+0.8*	*71.6*	*73.8*	*+2.2*
Lt.-ht. index	*72.1*	*72.7*	*+0.6*	*71.3*	*73.8*	*+2.5*
Br.-ht. index	*100.6*	*99.8*	*−0.8*	*100.0*	*98.9*	*−1.1*
Mean ht. index	*84.0*	*84.1*	*+0.1*	*83.3*	*84.4*	*+1.1*
Cranial module	152.9	151.0	−1.9	144.9	144.1	−0.8
Diam. frontal min.	94.5	92.2	−2.3	89.9	87.9	−2.0
Ment.-nas. height	123.1	128.0	+4.9	115.1	123.0	+7.9
Alv. pt.-nas. height	74.2	77.0	+2.8	69.0	72.7	+3.7
Diam. bizyg. max.	136.1	133.0	−3.1	128.1	127.0	−1.1
Facial index, total	*91.6*	*98.1*	*+6.5*	*88.3*	*98.0*	*+9.7*
Facial index, upper	*54.7*	*59.4*	*+4.7*	*53.9*	*57.3*	*+3.4*
Basion-nasion	102.9	100.9	−2.0	98.1	97.3	−0.8
Basion-alveolar point	102.1	100.2	−1.9	97.3	91.5	−5.8
Orbital height, mean	35.9	35.8	−0.1	34.8	35.3	+0.5
Orbital breadth, mean	39.9	38.8	−1.1	38.2	38.4	+0.2
Orbital index, mean	*90.1*	*92.5*	*+2.4*	*91.1*	*93.8*	*+2.7*
Nasal height	52.0	50.9	−1.1	48.7	50.3	+1.6
Nasal breadth	22.4	22.5	+0.1	21.9	22.0	+0.1
Nasal index	*43.2*	*44.3*	*+1.1*	*45.2*	*43.2*	*−2.0*
Length of alv. arch	54.4	55.0	+0.6	52.2	51.8	−0.4
Breadth of alv. arch	63.5	63.0	−0.5	61.8	60.0	−1.8
Alveolar arch index	*117.0*	*114.8*	*−2.2*	*117.2*	*116.6*	*−0.6*

* In this table the old stone grave series is limited to the material measured by the author in Field and Peabody museums (see Appendices A1–3).

† Maximum number.

It is uncertain whether the nose has changed. Unfortunately, the sample from the recent graves is not adequate to prove that these changes are statistically significant.

NON-METRICAL OBSERVATIONS ON THE SKULL

In working with cranial measurements not infrequently the fact is overlooked that dimensions are very incomplete descriptive agents. Even the relationship between two dimensions, known as the index, fails to tell anything about the shape measured, except the proportion of length to breadth. Thus it is possible to find diverse races agreeing closely in a few measurements and even indices, but showing their true relationship only when many measurements and indices are brought into consideration. On the other hand, when working with subdivisions of one racial group, where the resemblance is close, as in the case of the Eskimo, it is desirable to supplement the metrical with non-metrical, or visual, impressions.

Non-metrical observations apply generally to such characters as do not lend themselves readily to measurement, and include state-

ments of presence or absence and degree of development. In so far as these observations record more complex entities than do dimensions and indices, they aim at greater refinement of observation and comparison. However, refinement is usually accompanied by difficulties. Whereas measurements are recorded in standard units and obtained by well-established techniques, visual observations depend for their standards largely upon individual experience. The average European, or North European, which are the standards used by Hrdlička and Hooton, are but vague conceptions at best. For the most part non-metrical observations have value to others only in a general descriptive way. Nevertheless, few will deny that the eye can see differences which often escape metrical analysis.

In undertaking the present study I soon found that detailed non-metrical observations on Eastern Eskimo skulls are practically non-existent. Of course, the various peculiarities of the generalized Eskimo skull are well known; but such data are not recorded for those groups which are here used for comparison. After thinking over this situation, I decided to record for the Labrador Eskimo certain simple observations for which the standards are fairly clear. Since, as mentioned above, the time available was limited, these observations had to be limited in number. I report here in some detail only those which subsequently appeared to have some comparative value. For comparison in these cases I have made similar observations on 30 male and 30 female Greenland skulls from the National Museum series. The sexing is that reported by Hrdlička (1930).

The main cranial contours, as well as other details, are best shown by photographs, and for this reason the most complete of the Field Museum specimens are shown in Plates 1–9. Unfortunately, only two stone grave specimens could be used for this purpose. The reader can supplement these with the three shown by Oetteking (1908, 1931).[1]

NORMA LATERALIS

Profile.—It happens that the two stone grave specimens from the Field Museum series have considerable natural lambdoid flattening, in contrast both to those shown by Oetteking and those from the recent graves here illustrated. The rounded form is more typical. Otherwise the contours, except as affected by difference in length, are rather uniform.

[1] Unfortunately the skull from Sculpin Island (near Nain), Labrador, was overlooked, owing to the wording of the title, until too late to be included in the calculations. The measurements of the long bones have been used.

Pterion.—In all cases that could be observed, except one, the H-form of pterion was present. In the exceptional case (59658) there was temporo-frontal contact (x-type) on the left; on the right the separation was only 3 mm. This general observation may be supplemented with approximate measurements of the minimum temporo-frontal separation (Table 12). The larger number of cases from Labrador in which the form of the pterion cannot be determined reflects mostly a difference in age distribution and preservation. There is a suggestion, especially among the females, of a smaller temporo-frontal separation in the Labrador stone grave series than in the Greenland series.

TABLE 12.—WIDTH OF PTERION
(*In millimeters*)

Group	Side	?	0–3	4–6	7–9	10–12	13–15	16–18	19–21	No.	Aver.
					Male						
Labrador											
Recent grave	Right	9	..	..	1	..	2	..	..	12	12.7
	Left	8	..	..	1	1	1	1	..	12	12.2
Stone grave	Right	10	..	1	3	5	1	1	..	21	10.4
	Left	6	..	2	2	6	3	2	..	21	11.5
Greenland	Right	2	..	2	5	10	7	4	..	30	11.5
	Left	1	..	4	3	13	5	3	1	30	11.4
					Female						
Labrador											
Recent grave	Right	6	..	..	..	..	..	..	..	6	....
	Left	4	..	..	..	1	1	..	..	6	12.5
Stone grave	Right	9	2	4	9	5	2	..	..	31	8.1
	Left	12	2	3	7	6	1	..	..	31	8.0
Greenland	Right	8	..	4	1	10	6	1	..	30	10.9
	Left	9	..	1	4	9	5	2	..	30	11.1

External Auditory Meatus.—In 1933 I made a special study of the ear in Eskimo and Indian skulls. Hyperostosis of the tympanic plate is one of the characteristic features of the Eskimo skull, as contrasted with the Indian. This bony development is largely at the expense of the external auditory meatus, which in extreme cases is narrowed to a small tube. It is possible, therefore, to express this condition as it affects the meatus, the grades being: tube-like, slightly funnel-shaped, medium funnel-shaped, and marked funnel-shaped. Since the Greenland Eskimo were among the groups studied in 1933, the present findings on the Labrador series may be shown in comparison with the earlier findings (Table 13).

The considerable difference in the figures shown in this table may be due in part to the size of the series, but it is not impossible that I have unconsciously changed my standard during the interval. However, two things seem clear regarding the condition of the meatus in Labrador; namely, (1) that the feature is typically Eskimoid,

more so in the females than in the males; and (2) that, broadly speaking, the resemblance is with Greenland rather than with the Western groups (see Stewart, 1933, Table 3).

I may add that, as in other Eskimo groups, the shape of the porus acousticus varies from oval to round, with its axis vertical or slightly inclined to the horizontal (Frankfort). In no case was an ear exostosis observed.

TABLE 13.—FORM OF EXTERNAL AUDITORY MEATUS

Group	No.	Tube-like		Slightly funnel-shaped		Medium funnel-shaped		Marked funnel-shaped	
			Male						
Labrador									
Recent grave	12	1	15.2	8	57.6	3	24.2	..	3.0
Stone grave	21	4		11		5		1	
Greenland	38		5.3		34.2		42.1		18.4
			Female						
Labrador									
Recent grave	6	2	22.2	3	55.6	1	22.2	..	...
Stone grave	30	6		17		7		..	
Greenland	48		37.5		29.2		27.1		6.2

Lower Jaw.—Attention may be called in passing to the orientation of the lower jaw in the views of the recent grave skulls (Plates 3–9). These pictures give the impression of an unusually lengthened lower face with resultant increased inclination of the mandible, an un-Eskimo feature. Number 192013 (Plate 8) is somewhat extreme in this regard. It will be recalled from Table 11 that the recent grave series is distinguished by an absolutely longer face.

NORMA FRONTALIS

Because the characteristic keel-shape of the Eskimo skull is a construction limited largely to the parietal region, this feature is not so evident when the skull is viewed from in front.

The two old stone grave specimens here illustrated (Plates 1, 2) do not show the usual Eskimo facial characters of flatness and breadth. Oetteking's illustrations are more typical. However, neither do the recent grave specimens show these characters. Moreover, experienced observers might have difficulty in identifying the latter racially from these views alone. The difference in appearance would seem to reside chiefly in the relatively longer and narrower face, as pointed out in connection with Table 11.

Inclination of the Orbits.—A feature of the orbits, which is not described by the usual measurements or even by statements as to shape, is the inclination of the long axis. Although the angle of

orbital inclination is one deserving exact determination, since it varies considerably among races, the procedure is time-consuming. However, rather than express this angle in terms of some vague standard, I have attempted to estimate it approximately; that is, whether it approached 5, 10, 15, or 20 degrees.

With the skull on a pad in norma frontalis and with the aid of a narrow strip of cardboard, or a celluloid ruler, I mark the point where the long axis from lacrimale crosses the outer border of the orbit. In the same way I mark on the outer border the position of the horizontal through lacrimale. Then by comparing the angle formed between these three points with cardboard or metal angles (triangles) corresponding to the four degrees above-named, it is a simple matter to state which is the nearest to fit. It is convenient also, characterizing these four angles by descriptive terms, to say whether the group tends to have slight, medium, moderate, or pronounced orbital, inclination. The chief disturbing factor in this method is the visual determination of the horizontal; the position of the observer in relation to the skull affects this. A refinement would be to interpolate between the given angles.

The showing of the Labrador and Greenland series, as determined in this way, is given in Table 14. The figures would seem to indicate a considerable difference between the Labrador and Greenland groups, the latter being characterized by lesser inclination. How much the personal factor has entered into this result is uncertain, since I am unable to check the specimens. In any case it is safe to say that the majority of the Eskimos of Labrador and Greenland have from 5 to 10 degrees (slight to medium) of orbital inclination.

TABLE 14.—INCLINATION OF THE ORBIT

Group	Slight 5°		Medium 10°		Moderate 15°		Marked 20°	
			Male					
Labrador								
Recent grave	2	15.4	2	42.3	3	42.3	..	....
Stone grave	2		9		8		..	
Greenland	8	26.7	20	66.7	2	6.7	..	....
			Female					
Labrador								
Recent grave	1	25.8	1	54.8	2	19.4	..	....
Stone grave	7		16		4		..	
Greenland	15	50.0	15	50.0	..	...	..	....

NORMA VERTICALIS

The convention of illustrating the skull in the Frankfort position fails ofttimes to bring into one plane the maximum horizontal dimensions; the vertical photographic view may present a shape differing

slightly from that indicated by the cranial index. However, it may be seen that in general the shape of the Labrador Eskimo skull varies from elliptical to ovoid.

Parietal Foramina.—It is not clear that the variability of this feature has much comparative racial significance. Moreover, it is difficult to express the condition concisely for comparative purposes. I propose to give here the distribution of the various combinations (Table 15a), together with figures (Table 15b) derived with the aid of Stevenson's formula (1931). This formula, since it weights the different grades, is useful for converting non-metrical data to a form suitable for comparison:

$$\frac{p_1+2p_2+3p_3}{3}$$

p_1, p_2 and p_3 being the percentages of the different positive grades (small, medium, and large). It seems wise to disregard exceptional cases (one foramen in midline, multiple foramina).

TABLE 15a.—PARIETAL FORAMINA: COMBINATIONS

	Male			Female		
	Labrador		Greenland	Labrador		Greenland
	Recent grave	Stone grave		Recent grave	Stone grave	
Absent	1	5	7	3	8	9
1 small, right	1	2	..	..	2	1
1 small, left	2	2	..	1	2	1
1 medium, right	1	6	2	1	3	1
1 medium, left	2	1	2	..	1	1
1 large, left	..	..	1	..	..	2
2 small	2	1	6	..	3	5
2 medium	2	4	6	..	5	1
2, right small, left medium	..	..	2	..	1	4
2, right medium, left small	..	..	4	..	2	1
Total	11	21	30	5	27	26

TABLE 15b.—QUANTITATIVE ESTIMATE (STEVENSON'S FORMULA)

	Male		Female		Both Sexes	
	Right	Left	Right	Left	Right	Left
Labrador						
Recent grave	27.3	36.4	6.7	6.7	31.3	24.5
Stone grave	36.5	20.6	32.1	25.9		
Greenland	35.6	36.6	20.5	32.1	28.6	34.6

The results, although not very consistent, suggest that the foramina are about the same, quantitatively, in the two series, with perhaps a lower frequency in the females and neither side favored.

NORMA BASILARIS

Jugular Fossae.—Because of their position the relative sizes of the two jugular fossae do not always appear in photographs of the base of the skull. As a general rule, in man the right is larger than the left, but the reverse is not uncommon, and they may be approximately equal. This condition usually reflects also, among other things, the relative sizes of the sigmoid sinuses, which leave their impressions within the skull. Since considerable judgment is required in those cases where the difference in size between the two sides is not great, I have distinguished in Table 16 between those cases where the difference is marked and those approaching equality.

TABLE 16.—RELATIVE SIZE OF JUGULAR FOSSAE

Group	No.	R>L		R sl>L	Equal	L sl>R		L>R	
				Male					
Labrador									
Recent grave...	9	5	64.3	1	1	2	35.7	..	....
Stone grave....	19	13		4	..	2		..	
Greenland........	30	11	36.7	1	5	3	30.0	10	33.3
				Female					
Labrador									
Recent grave...	2	1	44.4	1	..	..	40.7	..	14.8
Stone grave....	25	11		2	7	1		4	
Greenland........	30	11	36.7	3	4	5	40.0	7	23.3

There seems to be a decided difference between the Labrador and Greenland series in that the latter shows greater frequency of the L > R arrangement. Absolute size is not considered here.

Perforation of the Tympanic Plate.—This feature varies considerably among racial groups; it is probably in the nature of a developmental defect. The conditions shown in Table 17 for the Labrador and Greenland series indicate fairly consistent differences. Fewer

TABLE 17.—PERFORATION OF THE TYMPANIC PLATE

Group	Side	Absent		Small		Medium		Large		?	
				Male							
Labrador											
Recent grave. (12)	Right	9	78.8	1	13.6	..	...	..	3.0	2	4.5
	Left	8		2		..		1		1	
Stone grave. . (21)	Right	16		5		..		..		..	
	Left	19		1		..		1		..	
Greenland..... (30)	Right	26	88.3	3	10.0	1	1.7	..	...	..	...
	Left	27		3		..		..		..	
				Female							
Labrador											
Recent grave. . (6)	Right	4	68.9	..	12.2	..	8.1	..	2.7	2	8.1
	Left	4		..		1		..		1	
Stone grave. . (31)	Right	22		5		2		1		1	
	Left	21		4		3		1		2	
Greenland..... (30)	Right	24	76.7	2	11.7	4	11.7	..	...	..	...
	Left	22		5		3		..		..	

perforations are found in the Greenland group. When summarized by means of the Stevenson formula, combining sexes and sides, the weighted percentage for Labrador is 9.9, and for Greenland 8.1. This compares with approximately 15 per cent for Algonkin Indians of the eastern United States.

Teeth.—Although the condition of the teeth, especially the pathological aspect, appears to be largely environmentally determined, it is important to place it on record, and this is a convenient place to do so. We will consider the degree of attrition and the antemortem tooth loss, as well as anomalies, etc.

Attrition varies among the individual teeth of the same jaw, and so the several degrees of this process as here recorded cannot be closely defined; they are general impressions based upon the previous examination of considerable material. Since Eskimos generally give their teeth hard usage, attrition is apparent at an early age. Thus the age composition of the series perhaps influences the picture less here than elsewhere. There is no point in comparing in these regards the Labrador and Greenland series. The chief interest lies in the two Labrador series, in which altered food habits

TABLE 18.—TOOTH WEAR IN LABRADOR

		Degrees of Attrition							
Group	Jaw	1	2		3	4		?	
			Male						
Labrador									
Recent grave	Upper	7	1	70.8	..	3	25.0	1	4.2
	Lower	7	2		..	3		..	
Stone grave	Upper	3	6	47.0	3	3	29.4	2	23.5
	Lower	2	5		1	3		6	
			Female						
Labrador									
Recent grave	Upper	5	1	78.6	1	..	14.3	..	7.1
	Lower	4	1		1	..		1	
Stone grave	Upper	5	9	55.0	3	2	22.5	1	22.5
	Lower	4	4		2	2		8	

may have left a mark on the teeth. In Table 18 are included all those specimens in which the degree of attrition could be estimated. Lower jaws were missing for many of the old stone grave skulls. This table shows that the first two degrees of attrition are much more common in the recent grave series than in the old stone grave series. The third and fourth degrees are somewhat more frequent in the latter group. It appears also that there is less wear among the females, which is surprising in view of the fact that Eskimo women under aboriginal conditions soften hides by chewing.

Ante-mortem tooth loss and congenitally missing third molars are summarized in Table 19. Generally speaking, Eskimos lose their teeth through the following chain of events: attrition, exposure of the pulp cavity, abscess formation, evulsion. The group showing more tooth-wear would be expected to have more missing teeth. The old stone grave people exceed the recent grave people in both respects. One thing is contradictory, however: The females of the old stone

TABLE 19.—ANTE-MORTEM TOOTH LOSS IN LABRADOR (INCLUDING CONGENITALLY ABSENT M3)

Group	Sex	No.	Teeth 1	2	3	4	5	6	7	8	All Teeth %
			Upper								
Labrador											
Recent grave	Male	12	4	..	1	3	5	3	4	6	8.9
	Female	7	..	1	..	..	..	..	..	..	
Stone grave	Male	20	2	..	1	3	4	3	2	5	9.8
	Female	27	5	5	2	3	6	8	6	19	
			Lower								
Labrador											
Recent grave	Male	12	..	..	..	..	..	2	..	2	1.7
	Female	6	..	..	..	..	..	..	..	1	
Stone grave	Male	15	6	4	1	1	2	5	4	13	14.5
	Female	16	5	4	2	1	3	3	3	15	

grave series have less attrition than the males (Table 18), but more missing teeth (Table 19). The explanation probably is that those cases with extensive tooth loss are included in Table 19 and not in Table 18; when the teeth are missing the degree of attrition cannot be stated. Another feature may be pointed out: The females of the recent grave series show very few missing teeth as compared to those of the old stone grave series.

Congenital absence and ante-mortem loss of the third molars cannot always be distinguished. However, reduction in size of the third molars is a stage in the evolutionary process leading to congenital absence. In the present material one case was observed (47872) where, in addition to absence of the upper third molars, the upper second molars were greatly reduced in size. Unfortunately, the lower jaw of this specimen was not present. Eight other cases of reduced third molars were noted. Three cases were observed also in which the upper lateral incisor on one or both sides was congenitally absent or diminutive (192013, both diminutive, see Plate 8; 47990, right missing; 57332, left missing). In only one case, 192023, were teeth observed in malpositions: the upper canines and the lower first premolars were displaced labially.

Palatal and Mandibular Tori.—These two characters have long been recognized as especially common among the Eskimo. Hooton (1918) concluded

> .... that the mandibular torus is essentially a functional adaptation rather than a racial character and that it occurs especially among peoples living in northern latitudes and existing principally on animal food. We may call it an Eskimoid character because it is predominantly present in the crania of the only Arctic people whose anthropology is reasonably well known (p. 58).

He expressed much the same opinion regarding the palatal torus (p. 62). I pointed out in 1933 (p. 494) that Hooton has since inclined to the view that this character is hereditary. This etiological uncertainty handicaps interpretation of the data that follows:

In the 60 Greenland skulls which I have examined, palatal tori were present in 62.7 per cent, mostly of slight to medium development. In contrast to this, of the 46 old stone grave skulls from Labrador in which the palate could be examined only 34.8 per cent had tori present; of 13 recent grave skulls 15.4 per cent had them present. Of the Labrador specimens only one showed a torus of more than slight development.

Regarding the mandibular torus there is this information:

Labrador and St. Lawrence Island jaws (31)	present in 87.1%	Hooton (1918)
Greenland jaws (large number)	present in 80.0%	Fürst (1908)
Labrador jaws (18)	present in 50.0%	Russell and Huxley (1899)

Many other records could be added, but this is sufficient to show the general frequency among the Eskimos. I made no detailed observations on this feature, but did note when it interfered with measurements of thickness of the horizontal ramus at the second molar. There was one such case (slight) among the jaws from recent graves (18) and 6 (2 marked) among those from old stone graves (31). Fischer-Møller (1937) notes merely that "in several cases the Naujan skulls and those from Baffin Island exhibit this peculiarity." (p. 49.)

According to the views regarding etiology expressed above, the lower incidence in Labrador, and especially in modern times, may be due to the lesser activity of the masticatory apparatus, or to a difference in heredity.

GENERAL

Microcephaly.—Three skulls were encountered among the old stone grave material, one at Field Museum (192035) and two at

Peabody Museum (47872, 57340), that were so small as to suggest dwarfs. They were not included in the series. It is interesting to note that Hutton (1912) describes such a dwarfed individual from Okak, known as Little John:

> I thought as I looked into his eyes, "Here is the smallest Eskimo that I have seen." Most of the Eskimos are small as inches go, though broad and bulky, but here was a veritable pigmy, a well-built man with brawny muscles, but standing but an inch or two over four feet.

Pathology.—The only notable pathological process encountered in the skulls is shown in Plate 4. In this case there seems to have been a cist in the roof of the palate.

DISCUSSION

The observations recorded in this section must remain largely descriptive, owing to the lack of comparative data on other Eskimo groups. Although a certain difference can be demonstrated between the Labrador and Greenland series, it is not certain how far this is the result of the small numbers in the series, or how these findings stand as regards the Eskimos in general. Nevertheless, a clear difference appears to exist between the recent and old stone grave series of Labrador. This difference may be appreciated better in the photographs than in the detailed analysis. In general it seems to involve a rounding of the head and lengthening of the face in the recent grave people. During the interval involved here the teeth do not seem to have suffered in development, but they have been subjected to less hard usage.

MEASUREMENTS AND OBSERVATIONS ON THE LONG BONES

Whereas cranial studies on the Eskimos of the eastern Arctic are fairly numerous, skeletal studies are almost entirely lacking. Indeed, the first draft of this section omitted Greenland entirely, because data on an adequate series were lacking. With the appearance of Fischer-Møller's recent (1938) paper on the skeletons from ancient Greenland graves, however, I have been able to include this important area. The Labrador series is scanty, but exceeds that of the Thule and equals that of the Igloo.

Only the major long bones will be considered in detail since the others are few in number and not represented in the comparative series. The method of measurement is that given by Hrdlička (1920). Sexing was done as far as possible with the aid of the pelvis but otherwise is a matter of individual judgment.

TABLE 20.—INDEPENDENT MEASUREMENTS OF THE SAME LONG BONES
PEABODY SERIES (LABRADOR)
(*In millimeters*)

Measurements	Russell and Huxley	Stewart	Dif.
	Male		
Maximum length of humerus	(10)295.6	(11)292.7	−2.9
Maximum length of radius	(5)219.5	(7)214.1	−5.4
Maximum length of femur	(16)425.8	(15)424.8	−1.0
Bicondylar length of tibia	(15)345.3	(10)342.3	−3.0
	Female		
Maximum length of humerus	(9)287.1	(7)281.0	−6.1
Maximum length of radius	(7)202.6	(4)199.5	−3.1
Maximum length of femur	(5)388.0	(5)390.6	+2.6
Bicondylar length of tibia	(9)313.9	(9)314.2	+0.3

I am unable to investigate personal error in measuring the long bones as in the case of the skull. However, there is some interest in my results as compared with those of Russell and Huxley, although numbers and sexing are not the same (Table 20). The largest difference between these two sets of observations appears in connection with the length of the humerus and radius. Probably this is due to sexing, since some of these bones are not accompanied by other skeletal parts that might assist identification. It should be noted, also, that the numbers represent rights and lefts combined.

HUMERUS

The arithmetical means of three measurements and an index are set forth in Table 21 according to sex, side, and whether or not paired. In all of the dimensions given, the combined Labrador groups fall far short of both Thule and Igloo. The differences between the Labrador and Greenland series are less marked and tend to disappear in the midshaft diameters. It is not clear that the shape of shaft at the middle differs significantly among the groups.

Septal Apertures.—Septal apertures of the humerus are not common among the Labrador Eskimo (Table 22), only 11 cases being observed among 62 bones (17.7 per cent, sides and sexes combined). Although 8 of the 11 cases occur among the old stone grave people, the numbers of specimens are too small for this to have significance. When analyzed quantitatively by Stevenson's formula (see p. 48), we get 15.6 per cent, which compares with 8.8 per cent for the Igloos and approximately 24 per cent for Algonkin Indians of the eastern United States. It may be noted also that Fischer-Møller (1937) found septal apertures in 3 of 14 Thule specimens, whereas in Greenland (1938) he found them in 19 per cent of the male and in 50 per cent of the female humeri.

TABLE 21.—MEAN DIMENSIONS OF THE HUMERUS

Group		Maximum Length		Max. Diam. at Middle		Min. Diam. at Middle		Index at Middle	
		Right	Left	Right	Left	Right	Left	Right	Left
				Male					
Labrador Recent	Paired	(9) 302.2	(9) 295.7	(9) 24.06	(9) 23.22	(9) 17.72	(9) 17.39	(9) 73.69	(9) 74.94
	Single	(2) 301.5	(1) 298.0	(2) 24.00	(1) 19.00	(2) 19.00	(1) 17.00	(2) 79.75	(1) 89.50
Old....	Paired	(5) 293.8	(5) 288.6	(5) 22.20	(5) 21.00	(5) 17.90	(5) 17.40	(5) 80.84	(5) 82.80
	Single	(2) 296.0	(5) 298.4	(2) 21.00	(5) 23.00	(2) 15.00	(5) 18.20	(2) 71.45	(5) 79.78
Total........		(18) 299.1	(20) 294.7	(18) 23.19	(20) 22.40	(18) 17.61	(20) 17.58	(18) 76.10	(20) 78.84
Thule Paired..........		(4) 316.2	(4) 311.2	(4) 27.50	(4) 26.00	(4) 20.25	(4) 20.00	(4) 73.62	(4) 77.30
Single..........		(1) 310.0	(1) 293.0	(2) 26.50	(1) 26.00	(2) 19.50	(1) 19.00	(2) 73.45	(1) 73.10
Total........		(5) 315.0	(5) 307.6	(6) 27.17	(5) 26.00	(6) 20.00	(5) 19.80	(6) 73.57	(5) 76.46
Greenland Paired..........		(23) 308.8	(23) 305.0	(22) 23.90	(22) 22.80	(22) 17.20	(22) 16.90	(21) 72.40	(21) 75.10
Old Igloo Paired..........		(16) 314.0	(16) 308.1	(17) 25.00	(17) 23.76	(17) 18.59	(17) 18.41	(17) 74.64	(17) 78.03
Single..........		(3) 318.7	(6) 311.8	(3) 25.67	(5) 23.80	(3) 18.33	(5) 18.70	(3) 71.67	(5) 78.74
Total........		(19) 314.7	(22) 309.1	(20) 25.10	(22) 23.77	(20) 18.55	(22) 18.48	(20) 74.20	(22) 78.19
				Female					
Labrador Recent	Paired	(6) 276.5	(6) 270.7	(6) 20.08	(6) 19.50	(6) 14.50	(6) 14.58	(6) 72.27	(6) 74.92
	Single	.. ..	(1) 279.0	.. ..	(1) 21.00	.. ..	(1) 16.00	.. ..	(1) 76.20
Old....	Paired	(3) 275.0	(3) 269.0	(3) 19.67	(3) 19.00	(3) 14.33	(3) 14.00	(3) 73.00	(3) 74.13
	Single	(1) 275.0	(3) 287.7	(1) 23.50	(3) 19.67	(1) 16.00	(3) 14.33	(1) 68.10	(3) 72.80
Total........		(10) 275.9	(13) 274.8	(10) 20.30	(13) 19.54	(10) 14.60	(13) 14.50	(10) 72.07	(13) 74.35
Greenland Paired..........		(15) 285.4	(15) 279.7	(16) 20.60	(16) 20.10	(16) 15.10	(16) 14.80	(14) 72.80	(14) 73.20
Old Igloo Paired..........		(13) 284.0	(13) 279.2	(14) 21.00	(14) 20.21	(14) 16.00	(14) 15.75	(14) 76.34	(14) 78.18
Single..........		(5) 287.8	(4) 290.2	(5) 22.40	(3) 21.67	(5) 16.70	(3) 16.67	(5) 74.58	(3) 76.90
Total........		(18) 285.0	(17) 281.8	(19) 21.37	(17) 20.47	(19) 16.18	(17) 15.91	(19) 75.87	(17) 77.95

TABLE 22.—SEPTAL APERTURES OF THE HUMERUS

Group	Side	Absent	Small	Medium	Large	Weighted % (Stevenson)
		Male				
Labrador						
Recent grave	Right	12	..	..	..	
	Left	11	..	..	..	
Stone grave	Right	5	..	..	2	
	Left	7	1	1	..	
		Female				.....*15.6*
Recent grave	Right	5	..	1	..	
	Left	6	..	..	1	
Stone grave	Right	2	..	..	2	
	Left	3	..	..	3	
		Both sexes				
Old Igloo	Right	35	1	3	..	.....*8.8*
	Left	33	2	3	2	

RADIUS

The radius is not collected as often as some of the other long bones; this is reflected in the numbers shown in Table 23. This table indicates that the forearm is very short in Labrador. Fischer-Møller noted the same thing, though not as extreme, in his Thule and Greenland series. The figures for Greenland are: males (42) 222.5, females (40) 201.7.

TABLE 23.—MEAN DIMENSIONS OF THE RADIUS

Group		Maximum Length: Male Right	Male Left	Female Right	Female Left
Labrador					
Recent	Paired	(3) 219.3	(3) 217.0	(3) 189.7	(3) 187.0
	Single	(4) 214.2	(2) 215.5	.. ..	(1) 207.0
Old	Paired	(2) 227.5	(2) 225.5	(1) 190.0	(1) 192.0
	Single	(1) 202.0	(4) 214.8	(1) 208.0	(1) 208.0
Total		(10) 217.2	(11) 217.4	(5) 193.4	(6) 194.7
Thule					
Paired		(2) 229.0	(2) 225.0	.. ..	.. ..
Single		(3) 217.3	(1) 237.0	.. ..	.. ..
Total		(5) 222.0	(3) 229.0	.. ..	.. ..
Old Igloo					
Paired		(13) 234.5	(13) 235.1	(6) 204.8	(6) 203.5
Single		(4) 237.2	(4) 232.8	(6) 211.5	(2) 236.5
Total		(17) 235.1	(17) 234.5	(12) 208.2	(8) 211.8

FEMUR

The measurements and indices of the femur are shown in Table 24. Throughout, the measurements of the Labrador series are well below those of the Thule and Igloo, but only a little below those of Greenland. The index at the middle, or pilasteric index, is lowest on the average in the Igloos. For the Labrador series this index would seem to approximate that for the Thule and Greenland. The platymeric index appears to be very similar in the Labrador and Igloo series. A difference in technique of measuring may be reflected in the unusual values for this index in Greenland.

Third Trochanters.—The great majority of the Labrador femora do not show a tuberosity at the site of insertion of the gluteous maximus muscle. Of the total series only 7 right and 10 left had this feature (usually oblong in shape) and of these only one could be said to be of more than slight development (medium round). This frequency approximates that found by Hrdlička for the Western Eskimo (1937). Fischer-Møller remarks in connection with the Thule group (1937) that "only one femur has a weak trochanter III" (p. 57); and in connection with the Greenland: "In only 9 per cent is there a trochanter tertius proper." (p. 19.)

TIBIA

Table 25 does not include the Thule for the reason that there are less than 5 specimens for one sex and side reported. In comparison with the Igloo and Greenland series, however, the Labrador tibia is considerably shorter than the former and approaches the latter. I suspect that the differences are partly due to technique: I have followed the directions given in Hrdlička's "Anthropometry":

> To take the ordinary length of the tibia introduce the spine into the orifice provided for this purpose in the vertical part of the osteometric board, and apply block to the most distant point (malleolus) (p. 129).

While working at the Peabody Museum, where an osteometric board of the Broca type was not available, I tried to achieve the same results by placing one condyle to the edge of the vertical part of the board, keeping both condyles as nearly as possible in the same vertical plane. I have noticed that the boards in our laboratory are variable as regards the size and shape of the hole in the vertical part. The position of the condyles in relation to the hole and the angle of inclination of the bone, both affect the measurement of length. In some boards, when the tibial spine is in the hole and the distal end resting on the board, there is considerable inclination to the bone. Dr. Hrdlička tells me that he now keeps the bone horizontal.

TABLE 24.—MEAN DIMENSIONS OF THE FEMUR

Group	Maximum Length		Bicondylar Length		Ant.-Post. Diameter		Lateral Diameter	
	Right	Left	Right	Left	Right	Left	Right	Left
Male								
Labrador	(12)	(12)	(12)	(12)	(12)	(12)	(12)	(12)
Recent. Paired	421.4	421.2	419.0	418.7	30.42	30.00	26.58	26.83
Recent. Single	.....	.....	.....	.....	.....	.....	.....	.....
	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)
Old.... Paired	429.7	431.3	426.1	426.6	30.43	30.21	28.00	27.71
	(3)	(4)	(4)	(4)	(4)	(4)	(4)	(4)
Old.... Single	419.7	425.5	420.5	421.2	29.75	29.75	26.75	26.75
	(22)	(23)	(23)	(23)	(23)	(23)	(23)	(23)
Total........	423.8	425.0	421.4	421.5	30.30	30.02	27.04	27.09
Thule	(4)	(4)	(4)	(4)	(5)	(5)	(5)	(5)
Paired.........	428.5	432.2	425.4	427.2	32.40	32.20	28.60	28.80
	(3)	(1)	(3)	(1)	(2)	(1)	(2)	(1)
Single.........	451.7	443.0	447.3	438.0	30.50	36.00	31.00	28.00
	(7)	(5)	(7)	(5)	(7)	(6)	(7)	(6)
Total........	438.4	434.4	434.8	429.4	31.86	32.83	29.28	28.67
Greenland	(26)	(26)	(27)	(27)	(31)	(31)	(29)	(29)
Paired.........	427.1	427.6	424.0	424.7	28.90	28.50	26.20	26.20
Old Igloo	(16)	(16)	(18)	(18)	(18)	(18)	(18)	(18)
Paired.........	441.2	441.2	438.2	437.7	33.19	32.94	28.33	28.89
	(3)	(1)	(2)	(1)	(2)	(1)	(2)	(1)
Single.........	450.0	428.0	459.5	426.0	34.25	34.00	28.75	28.00
	(19)	(17)	(20)	(19)	(20)	(19)	(20)	(19)
Total........	442.6	440.5	440.3	437.0	33.30	33.00	28.38	28.84
Female								
Labrador	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)
Recent. Paired	394.1	392.1	390.0	388.4	26.28	26.28	24.57	24.93
	(1)	..	(1)	..	(1)	..	(1)	..
Recent. Single	349.0	.....	348.0	.....	23.50	.....	21.00	.....
	(4)	(4)	(4)	(4)	(3)	(3)	(4)	(4)
Old.... Paired	384.5	384.5	381.5	381.0	25.33	25.33	23.75	24.12
	..	(1)	..	(1)	(1)	(1)	..	(1)
Old.... Single	.....	411.0	.....	402.0	26.00	23.00	.....	26.00
	(12)	(12)	(12)	(12)	(12)	(11)	(12)	(12)
Total........	387.2	391.2	383.7	387.1	25.79	25.73	24.00	24.75
Greenland	(31)	(31)	(32)	(32)	(32)	(32)	(32)	(32)
Paired.........	394.3	393.4	391.0	390.0	27.30	27.10	24.60	24.80
Old Igloo	(9)	(9)	(11)	(11)	(12)	(12)	(12)	(12)
Paired.........	395.7	395.8	397.3	398.4	28.58	28.54	24.62	24.88
	(7)	(2)	(7)	(2)	(6)	(3)	(6)	(3)
Single.........	401.1	436.5	399.8	412.5	28.92	28.67	26.17	26.17
	(16)	(11)	(18)	(13)	(18)	(15)	(18)	(15)
Total........	398.1	403.2	398.3	400.5	28.69	28.57	25.14	25.13

TABLE 24.—MEAN DIMENSIONS OF THE FEMUR (*Continued*)

Group		Index at Middle Right	Index at Middle Left	Max. Diam. Upper Flat. Right	Max. Diam. Upper Flat. Left	Min. Diam. Upper Flat. Right	Min. Diam. Upper Flat. Left	Platymeric Index Right	Platymeric Index Left
				Male					
Labrador		(12)	(12)	(12)	(12)	(12)	(12)	(12)	(12)
Recent	Paired	*87.92*	*89.95*	31.67	32.00	25.04	25.12	*79.26*	*78.67*
	Single	.....	.....	.....	.....	.....	.....	.....	.....
		(7)	(7)	(6)	(6)	(6)	(6)	(6)	(6)
Old	Paired	*92.46*	*92.00*	33.50	33.33	25.25	24.50	*75.75*	*73.53*
		(4)	(4)	(4)	(3)	(4)	(3)	(4)	(3)
	Single	*90.70*	*90.08*	32.00	33.00	23.75	24.33	*74.28*	*73.80*
		(23)	(23)	(22)	(21)	(22)	(21)	(22)	(21)
Total		*89.78*	*90.60*	32.23	32.52	24.86	24.83	*77.40*	*76.50*
Thule		(5)	(5)	..	..	..	..	..	..
Paired		*88.44*	*89.66*	.....	.....	.....	.....	.....	.....
		(2)	(1)	..	..	..	..	..	..
Single		*101.75*	*77.80*	.....	.....	.....	.....	.....	.....
		(7)	(6)	..	..	..	..	..	..
Total		*92.24*	*87.68*	.....	.....	.....	.....	.....	.....
Greenland		(31)	(31)	(30)	(30)	(30)	(30)	(30)	(30)
Paired		90.66	91.93	30.10	30.60	25.30	25.80	84.30	84.20
Old Igloo		(18)	(18)	(18)	(18)	(18)	(18)	(18)	(18)
Paired		*85.74*	*87.90*	34.94	34.89	26.75	27.03	*76.62*	*77.49*
		(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)
Single		*83.90*	*82.40*	35.00	32.00	26.50	26.00	*75.65*	*81.20*
		(20)	(19)	(20)	(19)	(20)	(19)	(20)	(19)
Total		*85.56*	*87.61*	34.95	34.74	26.72	26.97	*76.52*	*77.69*
				Female					
Labrador		(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)
Recent	Paired	*93.31*	*94.73*	29.14	29.14	22.00	22.57	*75.66*	*77.66*
		(1)	..	(1)	..	(1)	..	(1)	..
	Single	*89.40*	.....	25.00	.....	20.50	.....	*82.00*	.....
		(4)	(3)	(4)	(4)	(4)	(4)	(4)	(4)
Old	Paired	*93.12*	*95.33*	29.25	28.25	20.75	21.00	*71.25*	*74.45*
		..	(1)	..	(1)	..	(1)	..	(1)
	Single	.....	*113.00*	.....	29.00	.....	20.00	.....	*69.00*
		(12)	(11)	(12)	(12)	(12)	(12)	(12)	(12)
Total		*92.92*	*96.55*	28.83	28.83	21.46	21.83	*74.72*	*75.87*
Greenland		(32)	(32)	(29)	(29)	(31)	(31)	(32)	(32)
Paired		90.11	91.51	28.50	29.10	24.10	24.30	86.10	83.80
Old Igloo		(12)	(12)	(13)	(13)	(13)	(13)	(13)	(13)
Paired		*86.42*	*87.39*	31.65	31.77	22.65	23.35	*71.61*	*73.65*
		(6)	(3)	(4)	(5)	(4)	(5)	(4)	(5)
Single		*90.72*	*91.13*	31.50	30.60	23.50	22.90	*74.65*	*74.94*
		(18)	(15)	(17)	(18)	(17)	(18)	(17)	(18)
Total		*87.85*	*88.14*	31.62	31.44	22.85	23.22	*72.32*	*74.00*

TABLE 25.—MEAN DIMENSIONS OF THE TIBIA

Group		Physiologic Length Right	Physiologic Length Left	Ant.-Post. Diameter Right	Ant.-Post. Diameter Left	Lateral Diameter Right	Lateral Diameter Left	Index at Middle Right	Index at Middle Left
Male									
Labrador Recent	Paired	(12) 332.4	(12) 331.0	(12) 29.12	(12) 29.08	(12) 20.38	(12) 20.33	(12) *70.02*	(12) *70.05*
	Single	.....	.....	.....	.....	.....	.....	.....	.....
Old	Paired	(3) 346.3	(3) 347.0	(3) 30.33	(3) 30.67	(3) 23.67	(3) 22.67	(3) *77.93*	(3) *73.80*
	Single	(5) 341.6	(1) 338.0	(5) 29.20	(1) 27.00	(5) 21.40	(1) 21.00	(5) *73.60*	(1) *77.80*
Total		(20) 336.8	(16) 344.4	(20) 29.32	(16) 29.25	(20) 21.12	(16) 20.81	(20) *72.10*	(16) *71.24*
Greenland Single*		(68) 331.7		(70) 27.40		(70) 19.90		(70) 72.80	
Old Igloo Paired		(15) 358.1	(15) 358.3	(16) 32.47	(16) 32.09	(16) 21.38	(16) 21.62	(16) *65.93*	(16) *67.42*
Single		(2) 341.0	(3) 360.7	(2) 33.50	(2) 31.50	(2) 22.00	(2) 22.75	(2) *65.65*	(2) *72.25*
Total		(17) 356.1	(18) 358.7	(18) 32.58	(18) 32.03	(18) 21.44	(18) 21.75	(18) *65.90*	(18) *67.96*
Female									
Labrador Recent	Paired	(7) 300.4	(7) 300.1	(7) 25.50	(7) 25.00	(7) 17.64	(7) 17.78	(7) *69.46*	(7) *71.44*
	Single	.....	(1) 285.0	.....	(1) 23.00	.....	(1) 17.00	.....	(1) *73.90*
Old	Paired	(3) 311.0	(3) 310.3	(3) 25.33	(3) 25.00	(3) 18.33	(3) 18.33	(3) *72.40*	(3) *73.47*
	Single	(3) 306.3	(2) 318.5	(3) 25.00	(2) 27.00	(3) 19.33	(2) 19.00	(3) *77.43*	(2) *70.45*
Total		(13) 304.2	(13) 304.2	(13) 25.35	(13) 25.15	(13) 18.19	(13) 18.04	(13) *71.98*	(13) *71.95*
Greenland Single*		(59) 306.6		(61) 25.2		(61) 18.1		(59) 71.90	
Old Igloo Paired		(11) 317.2	(11) 317.5	(11) 27.82	(11) 27.68	(11) 18.23	(11) 18.59	(11) *65.74*	(11) *67.28*
Single		(5) 324.2	(2) 308.0	(5) 28.60	(2) 26.00	(5) 20.20	(2) 18.50	(5) *71.10*	(2) *71.10*
Total		(16) 319.4	(13) 316.1	(16) 28.06	(13) 27.42	(16) 18.84	(13) 18.58	(16) *67.41*	(13) *67.87*

* Right and left combined.

The techniques of measuring the diameters at the middle should be the same. Here the measurements are also somewhat smaller in the Labrador than in the Igloo series, and there is near identity with Greenland. The index in the Labrador and Greenland groups is consistently higher than in the Igloos.

LONG BONE RELATIONSHIPS

Three indices demonstrating the relative lengths of the four principal long bones are shown in Table 26. Figures for the Thule and Greenlanders are not available in such detail, the only distinction made being that of sex. For this reason the figures in Table 27 are given for comparison with those of Table 26. The greatest difference among the groups appears in the humero-radial index, doubtless due to the exceedingly short radius in the eastern Arctic. The closest agreement between these series is in the humero-femoral index. I suspect that the femoro-tibial index would be closer, were there better agreement in the technique of measuring the length of the tibia.

RECONSTRUCTED STATURE[1]

Now that the lengths of the major long bones have been given, it is worth while attempting to calculate therefrom the approximate average stature of the Labrador group.

Except for Hrdlička's calculations (1930, p. 317) of the percental relation of the lengths of the long bones to stature for the Smith Sound and St. Lawrence Island Eskimo, all methods for reconstructing stature from long bones are based upon European races. Of these methods the one with the greatest show of scientific backing is that of Pearson (1899). Starting from French cadaver measurements, Pearson first worked out formulae that would predict French cadaver stature from measurements of the fresh long bones. From this point he introduced corrections so that he could predict the living stature of any race from measurements of their dried long bones. Pearson's confidence that these formulae applied equally well to all races was based upon a single test case; he was able to predict the stature of a group of Aino from the long bone measurements of a neighboring group. The Aino being a divergent type from the French, in Pearson's estimation, he felt justified in urging the universal application of his formulae.

In 1929 Stevenson cast some doubt upon the general applicability of the Pearson formulae when he found that they failed to predict male Chinese cadaver stature by about 4 cm. From the discussion of this paper it appears that the Aino may not be so divergent from the French as Pearson supposed. Moreover, there is reason to

[1] The data presented under this heading, together with those on cranial and cephalic indices, formed the basis for a paper by the writer entitled "Change in Physical Type of the Eskimos of Labrador since the 18th Century," read at the Pittsburgh meeting of the American Association of Physical Anthropologists on April 16, 1938.

TABLE 26.—LONG BONE RELATIONSHIPS: LABRADOR, IGLOO

Group		Right: Hum.-rad. index	Right: Fem.-tib. index	Right: Hum.-fem. index	Left: Hum.-rad. index	Left: Fem.-tib. index	Left: Hum.-fem. index
				Male			
Labrador Recent	Paired	(2) 71.6	(12) 79.3	(9) 72.2	(2) 71.9	(12) 79.1	(9) 70.8
	Single	(4) 71.0	.. ....	(2) 70.6	(3) 74.2	.. ....	(1) 72.7
Old	Paired	....	....	....	....	....	....
	Single	.. ....	(2) 81.0	(1) 70.7	(1) 75.6	(1) 80.8	(3) 70.7
Total		(6) 71.2	(14) 79.6	(12) 71.8	(6) 73.6	(13) 79.2	(13) 70.9
Old Igloo	Paired	(10) 74.7	(11) 81.5	(12) 72.4	(10) 75.7	(11) 81.8	(12) 71.4
	Single	(5) 76.3	(4) 80.6	(4) 71.6	(5) 75.4	(4) 80.5	(4) 68.8
Total		(15) 75.2	(15) 81.2	(16) 72.2	(15) 75.6	(15) 81.4	(16) 70.8
				Female			
Labrador Recent	Paired	(3) 69.4	(6) 77.2	(4) 72.5	(3) 70.1	(6) 77.4	(4) 71.6
	Single	.. ....	.. ....	(1) 72.7	(1) 70.4	.. ....	(1) 69.2
Old	Paired	(1) 69.6	.. ....	(1) 72.7	(1) 71.6	.. ....	(1) 71.6
	Single	(1) 72.7	(2) 77.6	.. ....	.. ....	.. ....	.. ....
Total		(5) 70.1	(8) 77.3	(6) 72.6	(5) 70.4	(6) 77.4	(6) 71.2
Old Igloo	Paired	(5) 73.2	(9) 80.6	(6) 72.1	(5) 74.3	(9) 80.4	(6) 70.5
	Single	(7) 73.2	(5) 80.3	(8) 72.0	(3) 76.6	(2) 81.0	(4) 70.6
Total		(12) 73.2	(14) 80.3	(14) 72.0	(8) 75.2	(11) 80.5	(10) 70.5

TABLE 27.—LONG BONE RELATIONSHIPS: THULE, GREENLAND

Group	Hum.-rad. index	Fem.-tib. index	Hum.-fem. index
		Male	
Thule	72.2	80.9	72.0
Greenland	72.5	78.2	72.3
		Female	
Thule	75.0	82.8	67.4
Greenland	72.0	78.8	71.9

believe that the Pearson formulae do not apply to groups with relatively long trunk lengths, such as the Chinese and Eskimo. Unfortunately, Stevenson did not adjust his formulae for predicting living Chinese stature from their dried long bones.

Since there is some uncertainty as to whether Pearson's formulae will correctly predict living Eskimo stature from the measurements of their dried bones, it will be of some value to test these formulae on two Alaskan Eskimo groups for which we have both long bone and stature measurements. Such a check on the formulae is desirable before applying them to the Labrador data, because in the latter case the measurements for the long bones and living stature relate to different periods.

Reconstructed vs. Living Stature: St. Lawrence Island Eskimo.—In 1912 Dr. R. D. Moore visited St. Lawrence Island in the Bering Sea and obtained a series of measurements on the living, as well as numerous skeletons. The latter have been measured by Hrdlička (1930). Of these measurements the following, pertaining to the right side alone, are used in the Pearson formulae:

	Length (mm.)	
	Male	Female
Femur (maximum)	(49)428.3	(17)384.1
Tibia (without spine)	(26)344.2	(23)310.5
Humerus	(31)305.2	(24)279.0
Radius	(11)230.0	(16)209.7

Table 28 shows that Eskimo stature as reconstructed by the Pearson formulae from the above measurements falls short of the observed stature by 3.1 cm. in the males and by 3.2 cm. in the females.

TABLE 28.—RECONSTRUCTED VS. LIVING STATURE
ST. LAWRENCE ISLAND ESKIMO
(In centimeters)

Pearson formula	Male	Female
(a)	161.8	147.6
(b)	159.0	148.3
(c)	160.4	147.8
(d)	161.2	151.3
(e)	160.8	147.4
(f)	160.9	147.4
(g)	159.4	149.5
(h)	158.8	148.5
(i)	160.0	147.5
(k)	159.9	146.9
Average	160.2	148.2
Living (Moore)	(53)163.3	(48)151.4
Difference	3.1	3.2

Reconstructed vs. Living Stature: Nunivak Island-Hooper Bay Eskimo.—In 1927 Mr. H. B. Collins, Jr., and the writer measured a series of Eskimos on Nunivak Island in Bering Sea, and at the same time collected skeletons known to have been the ancestors of the living. Mr. Collins was able to increase the series by securing data and specimens the same year at Hooper Bay, north of Nunivak. Both of these localities are fairly isolated. Again, the long bone measurements of Hrdlička supply the following data for use in the Pearson tables:

	Length (mm.)	
	Male	Female
Femur (maximum)	(33)422.9	(27)402.8
Tibia (without spine)	(28)333.0	(28)312.7
Humerus	(27)308.2	(27)290.6
Radius	(27)226.7	(21)203.7

The results shown in Table 29 are rather similar to those for the St. Lawrence Island Eskimo. The differences between reconstructed and living stature in this case are 4.3 cm. for the males and 3.8 for the females. The findings on these two series suggest that Pearson's formulae fail to reconstruct Eskimo stature by at least 3 cm.

TABLE 29.—RECONSTRUCTED VS. LIVING STATURE
NUNIVAK ISLAND-HOOPER BAY ESKIMO
(*In centimeters*)

Pearson formula	Male	Female
(a)	160.8	151.2
(b)	159.8	151.5
(c)	157.8	148.3
(d)	160.1	149.3
(e)	158.9	149.7
(f)	159.0	149.7
(g)	159.4	150.4
(h)	159.5	151.3
(i)	159.9	151.2
(k)	159.2	150.3
Average	159.4	150.3
Living (Collins and Stewart)	163.7	154.1
Difference	4.3	3.8

Reconstructed vs. Living Stature: Labrador Eskimo.—On the basis of the above findings we can now proceed to apply the same formulae, with the correction, to the Labrador series. The data for these calculations are as follows:

OLD STONE GRAVES

	Length (mm.) Male	Female
Femur (maximum)	(10)426.7	(4)384.5
Tibia (without spine)	(8)343.4	(6)308.7
Humerus	(7)294.4	(4)275.0
Radius	(3)219.0	(2)199.0

RECENT GRAVES

	Male	Female
Femur (maximum)	(12)421.4	(8)388.5
Tibia (without spine)	(12)332.4	(7)300.4
Humerus	(11)302.1	(6)276.5
Radius	(3)216.4	(3)189.7

Admittedly the numbers are inadequate, but they are all we have. Table 30, in which we have anticipated the findings on the living (p. 85), suggests that Eskimo stature has decreased in Labrador since the eighteenth century.

TABLE 30.—RECONSTRUCTED VS. LIVING STATURE
LABRADOR ESKIMO
(*In centimeters*)

Pearson formula	Eighteenth Century Graves Male	Female	Nineteenth Century Graves Male	Female
(a)	161.5	147.6	160.5	148.4
(b)	155.8	147.2	158.1	147.6
(c)	160.2	147.4	157.6	145.4
(d)	157.6	147.8	156.7	144.6
(e)	160.5	147.2	158.6	146.7
(f)	160.6	147.2	158.7	146.8
(g)	155.7	147.1	156.6	145.8
(h)	155.6	147.1	157.6	147.3
(i)	158.2	147.2	158.8	147.8
(k)	158.6	147.1	158.4	147.3
Average	158.4	147.3	158.2	146.8
Correction	+3.0	+3.0	+3.0	+3.0
	161.4	150.3	161.2	149.8

Reconstructed stature	Male	Female
Eighteenth century graves	*(10)161.4	(6)150.3
Nineteenth century graves	(12)161.2	(8)149.8
Living (1880–1900)	(37)157.0†	(22)150.4†
Living (1928)	(58)158.4†	(78)148.3†

* Maximum number.
† Difference not significant (see Table 36).

GENERAL OBSERVATIONS

Vertebrae.—I have reported (1931, 1932) on the unusually high incidence of separate neural arch in the lumbar vertebrae of the Western Eskimos. The difference in incidence north and south of the Yukon River suggests, in view of more recent knowledge, that

this anomaly may have been more common among the Thule Eskimo and that its presence in the Seward Peninsula is due to a late return migration of this people into Alaska (Collins, 1937b). On account of this explanation it would be desirable to have more information regarding the distribution of this anomaly in the eastern Arctic. Unfortunately, the present collection does not help us much. The entire spine was preserved in only three of the recent grave specimens, and in only two others was the lumbo-sacral region preserved. However, of these five, two had the anomaly present (192005, L 4 and 5; 192008, L 5). Only two isolated anomalous lumbar vertebrae were observed (57352, 61604). Of the three complete spines, two had the modal number of segments, whereas one (192010) had 6 lumbar and 4 sacral vertebrae.

Pathology.—Hutton (1926) and Suk (1927) have pointed out that syphilis reached Labrador about 1902 upon the return of some natives from an exhibition in the United States. Prior to this the Eskimos about Hudson Bay and Straits may have acquired the disease from whalers, but there is no clear evidence that it penetrated to the coast of Labrador from this northern source before 1902. Until 1912 Hutton saw only primary and secondary stages in the living. By 1927, however, Suk was able to witness a number of cases in the tertiary stage. Regarding the older population, Suk says:

> My attention was focused on this question and for this I examined very carefully as many of the so-called heathen graves along the coast in different places as I had the opportunity of doing. It is not easy to say how many persons these skeletons represented, as many of the graves contained several individuals and the graves were already very much disturbed; all I can say approximately is that I examined about 150 to 160 long bones, a couple of skulls and some parts of skulls, in these different graves with the special object of finding traces of osseous syphilis. But there were no traces at all, none on the long bones and none on the few skulls I saw (p. 8).

My examination of the material forming the basis of the present study revealed no evidence of syphilis, either in the old stone grave series or in the recent series. As far as this material goes, therefore, it is fairly certain that syphilis was not present in Labrador in the middle of the nineteenth century.

Hypertrophic arthritis, a natural phenomenon of old age, showed little that could be called unusual in the Labrador material. In one of the recent grave skeletons, 192007, there was marked erosion of the left lumbo-sacral articular surfaces. The vertebrae in this case exhibited considerable lipping generally. Number 192014 had the vertebrae of the lumbar and lower thoracic regions fused in marked

kyphosis. There is some reason here for considering tuberculosis as the etiological agent causing this deformity.

The only other notable pathologic process is that involving the right humerus of 192009. This specimen is shown in Plate 10. Unfortunately, the corresponding scapula was not recovered, so the nature of the articulation is not known. I will not venture to diagnose this condition.

DISCUSSION

Interpretation of the findings on the long bones is handicapped chiefly by the small numbers involved in the groups represented. As far as the comparisons go, the long bones from Labrador are peculiar in their small size. In this respect the affiliation of this group is much more likely with Greenland than with the Thule or western groups. The significance of the unusually short radius must depend upon data from more representative series.

The error in sexing undoubtedly contributes in large measure, especially in small series, to the differences between the various groups. Nevertheless, in general the relative extremity proportions for the Labrador group are typically Eskimo. It is not clear that the recent grave series shows anything different in this regard.

Application of the correction factor to the reconstructed stature of the Eskimos, one of the most important items in this chapter, brings to light some interesting relationships.

Fischer-Møller has calculated by Pearson's method the stature of two groups: Naujan in Repulse Bay, and Greenland. Bearing in mind that the skeletal remains upon which these calculations are based are in general from a much earlier period than that in which measurements on the living have been obtained, the following relationship appears:

LOCALITY	RECONSTRUCTED STATURE (*Male*)		LIVING STATURE (*Nearest locality*)
	Fischer-Møller	Corrected (+ 3 cm.)	
Naujan	162.0*	165.0	166.0 (Melville Peninsula; Parry, 1824) 162.0 (Southampton Island; Tocher, 1902)
West and southeast Greenland	159.1	162.1	162.0 (west Greenland; Hansen, 1893) 160.4 (southeast Greenland; Hansen, 1914) 157.6 (southwest Greenland; Hansen, 1914)
Northeast Greenland	162.6†	165.6	?

* Maximum number of any one long bone (right side): 7 (femur).
† Maximum number of any one long bone not over 9.

Only males are considered here, but the females give about the same indications. It is interesting to note that Fischer-Møller has commented as follows on the reconstructed stature of the Greenland Eskimos:

> A stature of 159.1 for males and 148.2 cm. for females in prehistoric Greenland (i.e. prior to Hans Egede's time) is low, but the writer does not consider the estimate to be much too low. . . .
>
> If in particular we take Søren Hansen's measurements [1893], which comprise about two thousand individuals, the height is 2.9 cm. higher for males and 3.8 cm. for females compared with our heights calculated from the extremity bones. It must be remembered, however, that in the two to five hundred years which lie between the skeletons and those alive today the stature in all probability has increased as a result of the improved social conditions, just as stature has increased in Denmark and many other countries. In addition, there is the crossing with the Nordic race. S. Hansen states that for Greenlanders whose fathers or grandfathers were Danish, the average stature was 166 cm. (1938, pp. 25–26).

In view of the evidence showing that Pearson's formulae do not reconstruct Eskimo stature by at least 3 cm., I suggest a more likely explanation of the Greenland situation than that presented by Fischer-Møller; namely, that (except in the northeast) the ancient Eskimo had a stature about the same as reported by Hansen for west Greenland in 1893, and that among the fullbloods changing to the foods of civilization this stature has decreased (as witnessed by Hansen's measurements in southwestern Greenland).

That Hansen (1893) did not find the stature of the west coast Eskimo much different from that of the Eskimo of the southeast coast is due perhaps to his inclusion of mixed-bloods among the former. This possibility is suggested by the increased range of the measurements from west Greenland:

Locality	Male	Female	Source
West Greenland...	(346)140–183	(295)133–173	Hansen, 1893, p. 185
Southeast Greenland......	(22)148.6–168.2	(23)143.0–163.0	Hansen, 1914, p. 155
Labrador.........	(58)144.0–172.1	(78)136.4–156.7	Strong (Table 36)
Labrador.........	(37)148.8–167.3	(22)137.4–161.2	Lee et al. (Table 36)

Unfortunately, there is little information available as to the range of the lengths of the long bones from the ancient population of Greenland.

In the case both of Naujan and northeast Greenland we are dealing with reconstructed stature based upon few measurements, and so this stature may not be entirely accurate. Still, it is interesting to note that the two figures are very similar. This is important in view of the fact that both groups are Thule (for discussion of this point

see Larsen, 1934, pp. 161–172). Since, according to the latest theory of Eskimo migration (Chapter II), the Thule are considered to be a western people, and Eskimo stature today is higher in the west, our correction of reconstructed stature makes the picture more consistent. For example, the modern Point Barrow Eskimo are considered to be of Thule origin (Collins, 1937b). The two records of stature for this group disagree; Ray (1885) gives 161.3 for the males, whereas Seltzer (1933) gives 164.6. It will be recognized that the latter agrees with the reconstructed Thule statures given above.

The data in Tables 21–25 permit the reconstruction also of the Barrow Igloo stature; this in males is 166 cm. (corrected). Seltzer gives a stature of 169.5 cm. for the Old Igloos (1933, p. 358) which, although probably calculated by the aid of Pearson's formulae, seems to be excessive.

It appears therefore that perhaps two stature groups can be distinguished among the Eskimos: (1) a low-statured group, averaging in the males about 160–162 cm., and found chiefly in the east (Labrador, southern Greenland); and (2) a high-statured group, 164–166 cm. in the males, found chiefly in the west, but also among the Thule people of the east. In connection with the first group it is interesting to note that Birket-Smith (1925) has reported a stature of 160.6 cm. for the Caribou Eskimo (males). This may be significant in view of the theory (Chapter II) that the Caribou Eskimo represent a remnant of one of the "reservoirs" of population.

Seltzer (1933) has already called attention to this distribution of stature:

> I have shown, on the basis of somatological criteria, that the Hudson Bay Eskimos are undeniably related to a particular group of Cree Indians. I have also pointed out how the Hudson Bay, Labrador and Angmassalik Eskimos all belong to a single physical type. It follows, therefore, that this short-statured type of which the Hudson Bay tribes are members, is also closely affiliated with the Cree. . . .
>
> In Greenland today, both the east and west coasts are racially so mixed that very few pure Eskimos are to be found. There is no doubt in my mind that the bearers of the Thule Culture arrived here, but not in any great numbers. The Eskimos who have maintained their purity up to the present, are usually of the short-statured dolicho group. Occasionally, we find among them a few tall individuals, who are probably descendants of the Old Thulers (p. 366).

IV. RECORD OF CONTACT BETWEEN EUROPEANS AND NATIVE POPULATION OF NORTHEAST LABRADOR[1]

The historic period of Labrador divides itself naturally, and geographically, into two parts: That involving the section south of Hamilton Inlet, and that—more important from our point of view —involving the northeast coast.

The coast north of Hamilton Inlet is more difficult of access and less inviting than that to the south, and hence remained largely isolated until the arrival of the Moravian missionaries in the eighteenth century. As Hawkes has so aptly phrased it:

> The wiping out by the combined Whites and Indians, of the entire southern branch [of the Eskimo] south of Hamilton Inlet, which remained hostile and pagan to the last, and the careful nourishing of the northern branch by Christian missionaries, form one of the many paradoxes with which the history of native races in their relation to the Whites abounds (p. 1).

This quotation clearly indicates the end results for the two areas.

Since we are concerned chiefly, both as regards the living and the dead, with the northeastern part of the peninsula, I will not go into the history of the southern part of Labrador. Hawkes has given a good account of this to which the reader may refer.

Unfortunately, the history of northeastern Labrador concerns chiefly the Eskimos, because they have always been the coastal people, and exploration and trade by Europeans followed the coast.

The Moravian Missions

According to Hawkes, before the Moravians took up their work on the north coast they demanded and received 100,000 acres of land for each settlement, so as to "keep the Eskimo away from the contaminating influences of dissolute whites." After an unsuccessful attempt to settle near Hopedale in 1752, the Moravians established their first mission at Nain (see Map) in 1771. During the next century five other stations were started in the following chronological order: Okak, 1776; Hopedale, 1782; Hebron, 1830; Zoar, 1865; and Ramah, 1871. The last two were abandoned in 1890. Finally, two more stations were established: Makkovik in 1896 and Killinek, at Cape Chidley, in 1904. Killinek, too, has since been abandoned (Suk, 1927, p. 1).

[1] This chapter is placed here rather than following Chapter II because it deals primarily with observations on the living, which is the subject next to be considered. This position also facilitates reference with Chapter V.

The missionaries discovered early that it was difficult to combat the lures of the southern white traders. This led them to establish trading stations in connection with their missions so that they might regulate the trade. It is generally conceded that these trading stations did not seek to profit unjustly at the expense of the natives, and neither did they attempt to hasten unduly the process of acculturation. Through the efforts of the missions other commercial interests were for some time prevented from gaining much of a foothold along this part of the coast.

POPULATION

The history of the coast is largely that of the mission stations, where, once established, a missionary routine ensues. Hutton (1912) has given a readable account of such a course of events at one of the northern stations (Okak). Much of this detail is of little interest anthropologically. Of considerable interest, however, is the population trend, which declines with each tragic epidemic and with the

TABLE 31.—POPULATION OF LABRADOR MORAVIAN MISSION STATIONS

	Mission Records (Hawkes)					Official Censuses				
	1840	*1850*	*1860*	*1880*	*1890*	*1891*	*1901*	*1911*	*1921*	*1935*
Killinek....	...	...	...	...	...	...	50	106	...	...
Ramah....	...	...	...	44	59	64	72	...	17	...
Hebron....	179	346	206	202	...	256	211	196	72	132
Okak......	352	408	314	329	350	362	396	351	17	14
Nain......	298	314	277	282	263	272	287	230	159	250
Zoar.......	...	...	...	130	89	92	...	...	...	...
Hopedale..	205	229	241	315	331	341	229	213	170	153
Makkovik..	...	...	...	...	...	...	132*	167	32	65

* Including Turnavik.

steady course of acculturation. There is little need to detail the various epidemics, because they are imperfectly recorded and the causative agent is often in doubt. The result is reflected in the mission and census records. The figures given above in Table 31 do not represent the full Eskimo population; the records give only the resident populations of the stations; that is, the Christian natives, plus a few Whites. The figures of the last two censuses are confusing because of the effort at refinement; many small places are listed which formerly may have been figured in connection with the main stations.

More detailed figures for part of this period (1918–27) were obtained by Dr. Strong from Mr. Walter Perrett of Hopedale. They relate to six of the stations given in Table 31; that is, all except Ramah and Zoar, which, it will be recalled, had been abandoned:

Year	Population	Change
1918	1239	?
1919	859	−380
1920	847	− 12
1921	855	+ 8
1922	852	− 3
1923	884	+ 32
1924	887	+ 3
1925	915	+ 28
1926	899	− 16
1927	934	+ 35

These figures seem to pertain to the early part of each year, because the great decrease in population between 1918 and 1919 was attributed by Mr. Perrett chiefly to the influenza epidemic that came north in the autumn of 1918. According to Mr. Perrett this disease was carried from St. Johns, Newfoundland, by ship to Hebron and then to Okak. About 350 Eskimos died at Hebron and Okak. The latter, formerly a prosperous settlement, Strong found practically depopulated when he visited it in 1928 (cf. Table 31). The fact that the southern stations were so much less severely affected by the influenza was attributed by Mr. Perrett to the existence there of a smallpox epidemic. Only about 40 people died at Hopedale and Nain.

In spite of the fluctuations, it is clear that the general trend of the Labrador Eskimo population is downwards. The smallest figures are for the year 1920 (1921 of the census); there seems to have been somewhat of a recovery following this. The general trend is also shown by the census figures on "other denomination," which seems to be made up largely of Moravians:

Year	Number
1901	1383
1911	1312
1921	777
1935	1110

INTERMIXTURE

Not indicated in the census reports are the proportions of full-blood Eskimos, mixed-bloods and Whites constituting the Labrador population. Few figures of this nature are obtainable, partly because the missionaries may wish to minimize the extent of the intermixture, but also because untrained observers are not capable of estimating it correctly. It seems likely that mixture, getting an earlier start in the south, reaches a peak around Hamilton Inlet. Against the possible introduction into Moravian territory of mixed-bloods from the south is the repeated statement in the official reports that a population shift has taken place from the northern to the southern

stations. Thus, in his reports of official visits to Labrador in 1905 and 1908 Sir William MacGregor says:

> Some 28 of the natives settled at Hebron migrated further south this year. The missionaries of that place believe that the whole race has at present a tendency to move southwards (p. 88).

To show how far intermixture had proceeded at Hamilton Inlet by the early part of the nineteenth century the figures of Thomas Hickson may be quoted (Young, 1931). Hickson was a young minister who spent the summer of 1824 exploring Labrador for the Wesleyan Conference. Under date of July 9 he recorded in his journal:

> This morning I conversed with two real Esquimaux women with their ungodly European partners, with whom they have been living in a state of concubinage for many years. This I find to be a practice which prevails to a very great extent in this part of the world; it has sometimes been the case that they have left the poor Esquimaux and their little ones in the most distressing circumstances. I expressed my disapprobation of their conduct (p. 23).

On July 28 he recorded that

> A few of [the natives] assisted me to ascertain the probable number of the inhabitants of the bay, which is as follows:

Real Esquimaux adults	100
Real Esquimaux children	60
Half Esquimaux	60
European settlers	90
Canadian settlers	16 (p. 33)

Another source of admixture is the Labrador fishermen. Writing in 1885, Packard says:

> Few Europeans or Americans had previous to 1864 visited the Labrador coast north of Hopedale, and there the race has been preserved in most cases intact, though there may now be an occasional intermixture with the Newfoundland fishermen, who now go as far as Nain (1891, p. 271).

Writing again in 1891, Packard says:

> It has been already stated that the fishermen have only in recent years gone up the coast for their fares beyond Hopedale. When we visited the coast in 1864 scarcely any fishermen went beyond Hamilton Inlet. . . .
>
> The American fishermen have abandoned the Labrador coast, preferring the Newfoundland banks, which are nearer to their homes. As late as 1880 about one hundred Canadian and Nova Scotia vessels were annually engaged in the Labrador fisheries. Formerly a good many Jersey fishermen frequented the coast, where there were several of their fishing establishments; but of these only three remained up to 1880, while all the English mercantile houses have been withdrawn (1891, pp. 240–241).

Delabarre reports essentially the same thing in 1900:

> Very few of those [fishermen] who go down the Atlantic shore ever get beyond Nain or Port Manvers. One venturesome man alone maintains a fishing station at Cape Chidley all the year round, and goes to it every summer

in his steamer. These Newfoundlanders are almost exclusively of English descent, with a queer, oldtime flavor to their speech, with an almost fanatic formal piety and respect for the Sabbath. . . (p. 152).

On the other hand MacGregor reports that:

According to the missionaries the fishermen on the coast do not often give liquor to the natives, or interfere in any way with the family affairs of the Innuit (p. 88).

Such figures on mixed-bloods as are available I will give for what they are worth. MacGregor obtained the following figures during his visits to the coast in 1905 and 1908:

In 1856 there were practically no half-castes, "settlers," on the coast. In 1874 the Innuit Christians were 1,176, the "settlers" 115. In 1904 the Christian natives numbered 1,018, the heathen Innuit about 30, altogether say 1,050 persons; while the half-breeds or "settlers" were about 280. . . (p. 100).

To this he appends a letter from C. A. Martin of Nain giving further figures:

On the 31st of December, 1905, the population of our seven stations and their neighbourhood (i.e. from Killinek north to Cape Harrison south) was as follows:

Killinek	81	(Eskimo, 78; settler, 3)
Rama	79	(Eskimo, 75; settler, 4)
Hebron	174	(Eskimo, 166; settler, 8)
Okak	329	(Eskimo only)
Nain	287	(Eskimo, 233; settler, 54)
Hopedale	233	(Eskimo, 123; settler, 110)
Makkovik	138	(nearly all settlers)

. . . .I was very sorry to find that in the last ten years the Esquimaux on our Stations have decreased rather rapidly. While in the [decade] 1877–87 the decrease amounted to 15; 1887–97 to 56; now in the past ten years it amounts to 127, and in those ten years we had no special and severe epidemic on our stations, besides the influenza. The rates per 100 for the past seven years, as I found them, are the following ones:

		1901	*1902*	*1903*	*1904*	*1905*	*1906*	*1907*
Eskimaux	Births	4.4	4.5	6.0	4.3	5.8	4.3	4.2
	Deaths	4.6	6.2	5.8	9.6	7.8	6.5	6.6
		−0.2	−1.7	+0.2	−5.3	−2.0	−2.2	−2.4
Settlers	Births	3.2	2.8	4.4	2.7	4.0	3.0	2.7
	Deaths	2.1	2.8	1.0	2.3	1.4	2.0	2.3
		+1.1	...	+3.4	+0.4	+2.6	+1.0	+0.4

(pp. 212–214.)

In 1926 Dr. Suk, Professor of Anthropology and Ethnology, Masaryk University, Brno, Czechoslovakia, visited the mission stations on the north Labrador coast in a medical capacity. His notes on intermixture are of importance here both because of his anthropological training and because the date is so close to that of Dr. Strong's visit. As a result of stopping twice at each of the sta-

tions and staying at each place from four to ten days (seven weeks at Hebron) he gives the following opinion on intermixture:

> *Makkovik* with prevalent population of the Labrador settler type, i.e. White and Eskimo mixed breed in various shades and degrees of hybridism between the two human groups, from a cross between a pure blood white man and a pure blood Eskimo to a Near White with, say, one sixteenth or less of foreign admixture, and perhaps one or two pure Whites (the term "Near White" is a distinction used in the United States for an offspring of an octoroon with a pure White and we use it here in an analogous way).
>
> *Hopedale, Nain, Okak* in the majority pure Eskimos, the remainder hybrids of different shades.
>
> *Hebron* almost entirely pure Eskimos but for five or six mixed breeds. As for pure Eskimos this is the best station and at present the largest settlement on the Labrador Coast. . . (p. 1).

LONGEVITY

The mission stations having been established in Labrador so long, it is a comparatively easy thing to get the approximately correct age of most of the natives. The skeleton cannot be aged as closely. Nevertheless, there is some interest in the process of aging among a people subjected to the rigorous Arctic environment. Packard has observed that

> At Hopedale we understood the oldest person, the patriarch of the colony, to be a woman of seventy years: we saw her—a picture of ugliness which still haunts our memory. There were three Eskimos who were sixty years old. A man becomes prematurely old when forty-five years of age, as the hunters are by that time worn out by the hardships of the autumnal seal fishery (1891, p. 208).

MacGregor says further that

> It is a strange peculiarity of many of the young Innuit girls of about a dozen years of age that, if one looks only at the face of the girl, it would pass as belonging to a woman of thirty (p. 81).

Hutton also found age a very deceptive thing:

> "Sixty-two" might be the answer from a bowed old figure crouching over the stove—I would have guessed twenty years more than that. The fact is that the Eskimo wears out fast; after fifty he begins to decline, and few live long after sixty. I have known a few over seventy, and the people told me with wonderment about an old woman who lived to be eighty-two, and who worked to the last; but these are great rarities, and it must be a unique thing in one's lifetime to meet with an Eskimo great-grandmother. These very old people nearly always seem to be active to the last; they have an unusual store of vitality; and they die in harness, dropping out like those who are too tired to go any further, and passing away without illness or suffering. They are always those who have clung closely to their own native foods, and can always speak of having been mighty hunters once upon a time (1912, pp. 111–112).

The 1935 census lists 15 individuals, mostly females, of 70 years or over at Hopedale, Nain, and Hebron.

V. ANALYSIS OF METRICAL AND NON-METRICAL OBSERVATIONS ON LIVING ESKIMOS AND INDIANS

Circumstances Surrounding the Collection of the Data

In addition to the skeletal material already considered, Dr. Strong obtained during 1927–28, among other things, anthropometric measurements on a good series of Eskimos and a small series of Indians. In this work he was assisted by Dr. E. K. Langford, physician to the expedition. These data were turned over to the writer for critical analysis in the fall of 1935.[1]

In anticipation of the opportunity of securing anthropometric records while in Labrador, Dr. Strong had reviewed the subject of anthropometry with Dr. Henry Field, who was then preparing for his work in Arabia. Dr. Hooton had advised both men regarding desirable measurements to be secured, and in Strong's case had suggested that observations be included on the dentition and palatal torus. In addition to this preparation, Dr. Strong had provided himself with three handbooks on the subject; namely, those by Hrdlička (1920), Sullivan, and Wilder. Dr. Langford's only instruction in this subject was that given him by Dr. Strong.

Instruments were provided by Field Museum and consisted of Martin's anthropometer, spreading caliper, and small sliding caliper. Von Luschan's color scale was used for comparing skin color. All measurements and observations were recorded on blanks supplied by Field Museum.

The expedition established its headquarters at Anatalak Bay (see Map) and here several Montagnais-Naskapi Indians of the Barren Ground Band were measured in December of 1927. During January of 1928 some members of the Davis Inlet Band, encountered at a camp in the interior west of Davis Inlet, were measured. In April of 1928 three additional members of the same band were measured at Davis Inlet. Also during April and in May, measurements were recorded on Eskimos at the following places: Hopedale, Nain, and Hebron. Finally, one Indian of the Barren Ground Band was measured in June at Anatalak. Before measuring any of the Indians, Strong and Langford had checked their techniques. This procedure was repeated again in the spring of 1928 before measuring

[1] The writer gave a preliminary report on these measurements at the New Haven meeting of the American Association of Physical Anthropologists, May 1, 1936, under the title "New Measurements on the Eskimos and Indians of Labrador."

any of the Eskimos. All the Indians, and all but seven of the Eskimos used in the final analysis were measured by Strong, with Langford recording.

Any suspected admixture of white blood was noted at the time of measurement and all such individuals have been eliminated in analysis. In the case of the Eskimos the records of the Moravian Missions formed the basis for estimates of pure-bloodedness, as well as age. After deletions of mixed-bloods and subadults the series have the following composition: Eskimos: 58 males, 79 females; Indians: 11 males, 7 females. The numbers of mixed-bloods and subadults are too small to warrant analysis.

In addition to name, age, sex and birthplace, the data thus secured comprise the following items:

Stature	Menton-nasion (part only)
Sitting height	Forehead height
Head length	Nose height
Head breadth	Nose breadth
Head height	Ear length
Minimum frontal diameter	Ear breadth
Bizygomatic diameter	Skin color
Bigonial breadth	Number of missing teeth
Menton-crinion (part only)	Development of palatal raphe (torus)

PROBLEMS INVOLVED IN DATA OF THIS NATURE

The analysis of anthropometric records collected by those who, although thoroughly conscientious in their efforts to advance anthropological knowledge, yet are not experienced physical anthropologists, often presents some problems. In the first place, it is doubtful whether a hasty review of anthropometry preliminary to such a trip is fully retained in the memory. This is especially true when physical measurements are not the primary objective, as in the present instance. The problem thus created is whether or not resulting metrical differences from the comparative material are due to faulty technique or are inherent in the samples. It is undoubtedly true that if the observer clearly understands the definition of a particular dimension and tries conscientiously to obtain it, his result (in the form of the mean) will be reliable, provided as always that the series is adequate in number. On the other hand, when the true position of a landmark is not comprehended (the most frequent error) all measurements involving this point will likely be biased; they will be consistently either greater or less than the true dimension. As is commonly known, one of the landmarks most difficult to locate in the living is "nasion," and because of its uncertainty of location the

measurements of nose and face height, as obtained by the beginner, often are not trustworthy.

A second problem concerns the full-bloodedness of the subjects measured. Since it is usually impossible to obtain reliable genealogies among primitive peoples during a brief sojourn, it is customary to select the full-bloods by any means available. The ability to distinguish between full- and mixed-bloods by inspection increases with experience and cannot be imparted fully by instruction beforehand. In this respect an experienced physical anthropologist encountering a racial group for the first time would be at much the same disadvantage as anyone else. Even where local records are available, as in the present case, it is doubtful whether these are unerring. This situation may be obviated to some extent by securing photographs of as many of the subjects as possible. Unfortunately, in the far north it is not always convenient or possible to get a photograph when the opportunity presents itself.

In addition to the above standard problems associated with this type of material, the present case offers another difficulty. The anthropometric form supplied by Field Museum listed the usual measurements, including total facial height and upper facial height. The first of these was interpreted by Strong at the beginning as menton-crinion, but later as menton-nasion; the upper facial height was interpreted throughout as nasion-crinion (forehead).[1]

Of the several problems thus described, the first—the technique of measuring—offers the greatest difficulty in evaluating. One of the first aims in presenting these data, therefore, will be to judge their reliability. As far as the full-bloodedness of the sample is concerned, we are forced to assume that most cases of recent admixture were avoided. However, the few photographs secured (Plates 11–16) indicate that at least some individuals are not full-bloods.

PERSONAL ERROR

The reliability of the present measurements may be tested in three ways: (1) by examination of trial measurements on members of the expedition; (2) by comparison of measurements on the same subject as recorded by two different observers; and (3) by comparison with data from other sources.

TRIAL MEASUREMENTS

Before attempting work on the natives, Strong and Langford measured one another as well as other members of the party. It has

[1] Others have been confused in measuring face height; Stefansson, for example, measured to glabella instead of nasion (Seltzer, 1933, p. 318).

not been convenient to remeasure Langford or the others in connection with this analysis, but I have secured Strong's measurements. These figures are here presented (Table 32) in contrast to those (up to three trials) taken by Langford. The chief indication from this comparison is that Langford has failed to get maximum head and face breadths and is not measuring minimum frontal diameter. However, since Langford measured relatively few subjects, the above is of interest mainly for what follows.

TABLE 32.—EVALUATION OF TRIAL MEASUREMENTS

	Strong measured by Stewart (1936)	Strong measured by Langford (1927)
	CM.	CM.
Stature	178 (with shoes)	175.5–175 (moccasins)
Sitting height	95.8	91.1
	MM.	MM.
Head length	201	201–200–196
Head breadth	157	147–148–154
Head height	...	131(proj. method)
Min. front. diam.	112	121–120
Bizyg. diam.	146	142–134
Bigon. diam.	108	107
Menton-crinion	(hair loss)	164–163
Menton-nasion	116	126–119
Nasal height	54	58– 56
Nasal breadth	35	32– 33
Ear length	67	65– 65
Ear breadth	37	34– 33

DUPLICATE MEASUREMENTS

The data contain three cases where the same subject was measured by both Strong and Langford. Also, some measurements were obtained on the same individual (4 or 5 years apart) by Strong and the late Dr. Truman Michelson. The identity of these subjects is assured by the agreement in name, age, and birthplace. Their measurements compare as shown in Table 33. Here it is certain that Langford is not measuring minimum frontal diameter. Also, it seems probable that Strong is not securing maximum face and head breadths, but this is not definite because of the poor agreement between the different observers. However, Strong is consistently high in nasal height and low in forehead height, from which it can be concluded that he located nasion too high.

COMPARATIVE DATA

With these indications in mind we can turn now to comparison with the data from other sources. Here a noteworthy situation exists: The largest series of Labrador Eskimo of one sex (male) heretofore reported in the literature (Duckworth) for which a number

TABLE 33.—DUPLICATE MEASUREMENTS ON THE SAME SUBJECT

Observer	Subject No.	Stature	Sitting height	Head length	Head breadth	Head height	Min. front. diam.	Bizyg. diam.
Strong..........	15	140.2	74.6	180	134	110	104	128
Langford	23	141	67	175	136	112	111	113
Strong..........	9	161.1	85	194	142	124	112	140
Langford	24	162	87	192	146	121	125	134
Strong..........	130	145.3	78.4	190	144	133	103	112
Langford	31	142	71	182	145	136	125	132
Strong..........	32	.....	....	180	137	...	...	134
Michelson	?	.....	....	181	140	...	...	142

TABLE 33.—DUPLICATE MEASUREMENTS ON THE SAME SUBJECT (*Continued*)

Observer	Subject No.	Bigon. diam.	Menton-crinion	Forehead height	Nasal height	Nasal breadth	Ear length	Ear breadth
Strong..........	15	102	176	58	51	35	70	38
Langford	23	101	175	72	38	29	67	30
Strong..........	9	112	187	71	59	40	68	38
Langford	24	110	196	74	51	41	73	31
Strong..........	130	110	195	76	52	34	70	36
Langford	31	120	194	76	48	34	70	31
Strong..........	32	...	...	..	59	40	..	..
Michelson	?	...	...	..	50	40	..	..

of measurements are given comprises 11 individuals—certainly not an adequate sample. As for the Indians, only one series has been reported (Hallowell), and, although adequate in number, it contains many frankly mixed-bloods and is from the southern part of the peninsula. Neither of the bands measured by Strong (Barren Ground and Davis Inlet) is represented in Hallowell's series.

Fortunately, the situation as regards the Eskimo is improved through the kindness of Dr. Boas in allowing the use of unpublished measurements collected for him by Lee and Sornberger during 1891–92 (see Appendix C). This is the same series (26 males) for which Dr. Boas reported mean stature in 1895.[1] Likewise, it includes the series of 10 males measured by Lee and for which head and face breadths were reported by Dr. Boas in 1901.[2] Without these meas-

[1] Dr. Boas eliminated a number of mixed-bloods in order to obtain the final 26. In going over these records I was unable to get a combination of 26 that gave the same mean stature as reported in 1895.

[2] One subject is not used here because of stated White mixture.

urements for comparison it would be difficult indeed to analyze the present material.

The remaining small series of Eskimos described in the literature were measured, probably under laboratory conditions, in Europe by Duckworth (11 males, 10 females), Pittard (8 males, 6 females) and Virchow (3 males, 2 females) and thus probably are reliable. As to Lee's and Sornberger's techniques, Dr. Boas states (personal communication dated September 24, 1935): "I consider the observations

TABLE 34.—DUPLICATE MEASUREMENTS ON THE SAME SUBJECT

Observer	Subject No.	Stature	Finger reach	Sitting height	Head length	Head breadth	Menton-nasion	Bizyg. diam.	Nose height	Nose breadth
Lee	59	167.3	169.4	89.1	196	154	124	149	50	38
Sornberger	13	166.2	170	88.3	200	155	123	150	56	38
Lee	56	153.6	158.2	84.9	193	152	115	142	47	36
Sornberger	12	153.2	161.6	80.4	190	151	115	144	46	35

TABLE 35.—AGE DISTRIBUTION IN LABRADOR ESKIMO SAMPLES

AGE PERIODS	STRONG		OTHERS*	
	Number	Per cent	Number	Per cent
	Males			
18–30	19	32.8	18	48.6
31–40	12	20.7	8	21.6
41–50	7	12.0	6	16.2
51–60	9	15.5	5	13.5
61–old	11	19.0	..	....
Total	58	100.0	37	99.9
	Females			
17–30	22	28.2	10	47.6
31–40	15	19.2	3	14.3
41–50	12	15.4	3	14.3
51–60	12	15.4	1	4.8
61–old	17	21.8	4	19.0
Total	78	100.0	21	100.0

* Lee, Sornberger, Pittard, Virchow.

by Lee reliable. In regard to the others I am not quite so certain." On this point there is somewhat of a check owing to the fact that both men measured the same subject in two instances. The identity of the individuals is established by agreement in name, age, and places of observation and birth. The agreement here (Table 34) is fair and certainly better than in the preceding cases. As far as personal error is concerned, I feel that it is safe to combine all these observations into one series.

In addition it can be shown that the comparative data are very similar to Strong's series both as to age distribution and birthplace.

Age.—Owing to the long existence of the Moravian Missions in Labrador, it has been possible to record fairly close estimates of age of the Eskimos measured. The general distribution of these ages in five large periods is shown in Table 35. The point that I wish to emphasize is the frequency of old individuals, especially among the females of both series. However, Strong believes now that none of these old people was decrepit. The same probably applies to the comparative series.

Birthplace.—Strong failed to record the birthplaces of the Eskimos measured at Hopedale and Hebron. However, in the 62 cases in which this information is available the following localities (from north to south) are found:

Locality	Males	Females
Ramah	1	..
Hebron	4	7
Okak	7	4
Nain	15	17
Zoar	2	2
Davis Inlet	..	1
Hopedale	2	..
	31	31

Lee and Sornberger measured Eskimos with the following birthplaces (north to south):[1]

Locality	Males	Females
Ungava Bay	1	..
Nachvak	1	1
Okak	1	..
Nain	2	..
Davis Inlet	1	1
Hopedale	5	7
Aillik to Hamilton Inlet	13	3
	24	12

Both Pittard and Virchow measured individuals from Hebron, but their birthplaces are not stated. Duckworth seems to have measured the same group as Pittard (see Shapiro, 1931, p. 355). Thus the comparative data on the Labrador Eskimos include individuals from the same localities as found in Strong's series, and in addition some from farther south. Perhaps even these southern localities are included in Strong's series, since some of the Eskimos measured at

[1] Two localities have not been located; namely, Francis Harbor and Manaska Island. A male and a female are listed from each.

Hopedale may have come from the south. It should be remembered, however, that the Eskimos seem to be moving southwards (see p. 72) and mixing with the Whites. Today few full-bloods live south of Hopedale, whereas in 1891–92 Lee and Sornberger were able to find a number who had been born as far south as Hamilton Inlet.

RÉSUMÉ OF CONDITIONS AFFECTING THE LABRADOR SERIES

Before presenting the detailed results it may be well to review the situation as thus far disclosed: Strong has collected measurements on a large series of Labrador Eskimos and a small group of Montagnais-Naskapi Indians (Davis Inlet and Barren Ground Bands). A few of the measurements in the case of the Eskimos were taken by Langford. By comparison of records of individuals independently measured by these two men, there is reason to believe that the techniques of both were faulty as regards certain dimensions, and probably both had large individual errors.

In view of the fact that there is some comparative material available for similar groups of Eskimos and none for the northern Indians, it is possible in the former to apply the final test of comparing means. This rather reverses the usual process in anthropometry; namely, to seek more refined measurements in order to check the older data. However, in this instance there is no alternative if we wish to be thoroughly critical, and especially if we are going to evaluate the figures for the Indians.

The importance of the measurements on the Indians, as already suggested, is due to the fact that they are representatives of the most northern bands and probably as nearly full-blood as can be found. The Indians measured by Hallowell, for the most part from southern bands and frequently mixed-bloods, were brachycephalic, in contrast to the mesocephalic Eskimo. Hallowell says:

> Data obtained from bands bordering on the habitat of the Eskimo would furnish a very interesting problem, since the results might be compared with the Indian groups farther away as well as with the Eskimo themselves, for whom, however, the available data are very inadequate (p. 339).

Thus the problem is to test the present measurements of the Eskimo against the comparative data from other sources and on the basis of this showing to evaluate the differences between the two Indian samples. Unfortunately we are additionally handicapped by the smallness of the present Indian sample, inasmuch as the differences cannot be checked statistically.

INDIVIDUAL MEASUREMENTS AND OBSERVATIONS

The means of the various measurements (see Appendix C) together with their statistical constants, as far as significant,[1] will now be considered individually. In view of the fact that measurements on the Eskimo in general have been summarized recently by Shapiro (1931) and Seltzer (1933), no attempt will be made to repeat this work. The chief comparison in the case of the Indians, aside from Hallowell's (1929) Labrador series, will be with the Cree and Chipewyan as measured by Grant (1930). Only in cases where these comparative data are lacking for the Labrador Eskimo and Indians will the measurements of more remote groups be included in the tables.

STATURE

This is the one measurement on the Labrador Eskimos, known since 1895, which has been based on an apparently adequate number. The present series (Table 36) verifies the earlier finding that the modern Labrador group is among the shortest of the Eskimos. Shapiro has commented as follows (1931, p. 359):

> If there is any significant admixture of European blood among these Labrador Eskimo, it is rather difficult to reconcile that fact with the very short stature characteristic in this area. On the whole, the stature of the Eskimo definitely appears to increase from east to west.

This latter observation is not as clearly shown by Seltzer's table (1933, p. 341) in which, however, many smaller series are included.

In the discussion relative to stature reconstructed from the long bones (p. 65), I have shown that these extremes were not as pronounced in prehistoric times. An increase in stature would be expected not only from mixture with a taller group, as Shapiro has pointed out, but also from improved nutrition. Lacking both of these factors, and, on the other hand, with nutrition impaired, due to the increasing consumption of white man's food, the decrease in stature here demonstrated seems not unreasonable, and degenerative in nature.

Strong's findings for the Labrador Indians, in spite of the small numbers, are in agreement with those of Hallowell. The Indians

[1] As in the case of the skeleton, series of less than 20 have not been treated statistically. Even this size series is probably too small to give entirely trustworthy results. When the series was adequate the means have been calculated by the dispersion method. Pearson's tables for statisticians and biometricians (1914) have been of assistance in calculating the probable errors. The "×p.e." indicates the number of times that the difference between two means exceeds its probable error. According to general agreement a difference which is three or more times its probable error is almost certainly significant.

TABLE 36.—STATURE
(*In centimeters*)

Observer	Number	Range	Mean ± p.e.	S.D. ± p.e.	C.V. ± p.e.	× p.e.
Labrador Eskimo: Male						
Strong	58	144.0–172.1	158.35 ± 0.50	5.60 ± 0.35	3.54 ± 0.22	....
Lee*	9	153.4–*167.3*				
Sornberger	17 } 37	149.7–162.2	156.99 ± 0.48	4.30 ± 0.34	2.74 ± 0.22	1.97
Pittard	8	*148.8*–161.8				
Virchow	3	155.0–163.5				
Duckworth	11	?	157.7	....	....	....
Labrador Eskimo: Female						
Strong	78	136.4–156.7	148.32 ± 0.32	4.20 ± 0.22	2.83 ± 0.15	....
Lee†	10	138.6–161.1				
Sornberger	4 } 22	*137.4*–152.4	150.45 ± 0.94	6.54 ± 0.66	3.00 ± 0.30	2.15
Pittard	6	147.5–*161.2*				
Virchow	2	144.8–152.4				
Duckworth	10	?	149.7	....	....	....
Indian: Male						
Labrador						
Strong	10	155.1–177.4	164.6	....	....	....
Hallowell	41	155 –177	166.2 ± 0.61	5.80 ± 0.43	3.50 ± 0.26	....
Cree						
Grant‡	22	146.5–170.5	161.0 ± 0.91	6.36 ± 0.65	3.95 ± 0.40	....
Chipewyan						
Grant	44	152.5–179.5	166.4 ± 0.67	6.57 ± 0.47	3.95 ± 0.28	....
Indian: Female						
Labrador						
Strong	7	144.0–159.6	153.3 ±	....	....	....
Hallowell	29	143 –162	154.6 ± 0.56	4.50 ± 0.40	2.90 ± 0.26	....
Chipewyan						
Grant	20	140.5–155.5	150.9 ± 0.76	5.06 ± 0.54	3.36 ± 0.36	....

* In 1895 Boas reported a stature of 157.5 cm. for 26 males measured by Lee and Sornberger. The composition of the present series is probably not identical with that studied by Boas; it gives an average stature of 156.3 cm.

† Boas (1895) reported a stature of 148 cm., without stating the number of individuals. Average of the present series (14) is 148.4 cm.

‡ Boas (1895) reported a stature of 168.5 for 57 males (no details), and 156.2 for an unstated number of females.

are decidedly taller than their Eskimo neighbors. Yet, as Hallowell has shown, they suffer by comparison with other eastern Indians and are exceeded by distant Eskimo groups. The Chippewa (Hrdlička, 1916), for instance, average 171.9 for the males and 157.2 for the females. The Mackenzie Eskimo (Seltzer, 1933) average 169 for the males and 155.5 for the females. Such widely divergent figures for male Cree stature as 161 (Grant) and 168.5 (Boas) must cast doubt on Seltzer's claim (1933, p. 363) that "we cannot escape the conclusions that the Cree Indians and the Hudson Bay Eskimos are physically identical."

SITTING HEIGHT

Heretofore Duckworth's figures for small series have been the only record of sitting height available for the Labrador Eskimo.

Strong's series yield very similar means (Table 37). Although the means of the Lee-Sornberger series are slightly higher for both sexes, the difference is not statistically significant, at least in the males (see, however, under "Relative Sitting Height"). In view of the short stature of this group it is quite natural that sitting height is short here in comparison with that of other Eskimos (Seltzer, 1933). Doubtless, as in the case of stature, this extreme was not as pronounced in prehistoric times.

TABLE 37.—SITTING HEIGHT
(*In centimeters*)

Observer	Number	Range	Mean ±p.e.	S.D. ±p.e.	C.V. ±p.e.	× p.e.
			Labrador Eskimo: Male			
Strong	57	70.7–89.0	81.73±0.34	3.75±0.24	4.59±0.29	....
Lee 9, Sornberger 17	26	77.3–90.5, 79.0–87.9	83.14±0.40	3.01±0.28	3.62±0.34	2.71
Duckworth	11	?	81.0	....	....	....
			Labrador Eskimo: Female			
Strong	78	71.0–85.5	78.69±0.24	3.19±0.17	4.05±0.22	....
Lee 10, Sornberger 4	14	73.4–86.4, 75.2–85.0	80.0	....	....	....
Duckworth	10	?	79.7	....	....	....
			Indian: Male			
Labrador						
Strong	10	77.7–89.4	84.4	....	....	....
Hallowell	41	79 –95	87.40±0.32	3.00±0.22	3.40±0.25	....
Cree						
Grant	22	79.8–96.3	89.10±0.55	3.82±0.39	4.28±0.44	....
Chipewyan						
Grant	40	84.3–94.8	89.40±0.30	2.79±0.21	3.11±0.32	....
			Indian: Female			
Labrador						
Strong	7	73.3–82.7	79.9	....	....	....
Hallowell	29	64 –86	79.90±0.49	3.90±0.34	4.90±0.34	....
Chipewyan						
Grant	14	76.8–87.3	82.40±0.52	2.86±0.36	3.47±0.44	....

Considering that Strong's Indian series do not show as great ranges as Hallowell's, the means are in fair agreement. All of these figures, however, are below those obtained by Grant on tribes to the west.

RELATIVE SITTING HEIGHT

Table 38 shows that, relative to stature, mean sitting height for males is significantly different in the Strong and the Lee-Sornberger series. However, the figure for Strong's series is in agreement with that of Duckworth. By comparison with the Labrador females and other Eskimo groups, it would appear that Strong's figures are too low. I suspect that there has been some error in obtaining sitting height. Since this measurement involves the deduction of bench height, there is always a chance for error. I note, for instance, that

Strong used chiefly three benches of heights 53, 48.3, and 43.3 cm., respectively. The first two benches are probably too high for people of short stature. In addition there is the possibility that the second and third benches were really one and the same, the eight being mistaken for a three, or vice versa.

The relatively long trunk length in the Eskimos, as compared to extremity length, is believed to be the factor which interferes with the prediction of stature from the long bones of this group. Thus, the approximate figure of 53 for the Eskimo compares with the 51.9 for the French given by Stevenson (1929).

TABLE 38.—RELATIVE SITTING HEIGHT

Observer	Number	Range	Mean ±p.e.	S.D. ±p.e.	C.V. ±p.e.	×p.e.
			Labrador Eskimo: Male			
Strong	57	47.7–54.6	51.58±0.13	1.44±0.09	2.79±0.18	....
Lee 9, Sornberger 17	26	50.1–57.0, 51.5–55.3	53.08±0.20	1.48±0.14	2.79±0.26	6.25
Duckworth	?	?	51.4*	....	....	....
			Labrador Eskimo: Female			
Strong	78	46.1–57.5	53.03±0.14	1.80±0.10	3.40±0.18	....
Lee 10, Sornberger 4	14	48.6–55.9, 52.2–57.1	53.9	....	....	....
Duckworth	?	?	53.2*	....	....	....
			Indian: Male			
Labrador						
Strong	10	50.1–52.8	51.3	....	....	....
Hallowell	41	49 –55	52.40±0.18	1.70±0.13	3.20±0.24	....
Cree						
Grant	22	53 –59	55.80±0.23	1.63±0.17	2.92±0.30	....
Chipewyan						
Grant	40	49 –57	53.80±0.22	2.06±0.16	3.83±0.29	....
			Indian: Female			
Labrador						
Strong	7	50.6–53.6	52.1	....	....	....
Hallowell	29	42 –53	51.70±0.28	2.20±0.19	4.20±0.37	....
Chipewyan						
Grant	14	51 –57	54.80±0.29	1.62±0.21	2.96±0.38	....

* Calculated from means.

The figures for the Indians shown in Table 38 are low as compared with Grant's figures shown and with Hrdlička's findings on the Sioux (1931) and Southwestern Indians (1935).

HEAD LENGTH

The early measurements of head length for the Labrador Eskimos, as published by Duckworth, Pittard, and Virchow, showed averages for the males ranging from about 191 to 197. When these small series are combined with those of Lee and Sornberger (Table 39), a mean is obtained for each sex that agrees fairly well with Strong's; only that for the females is significantly different. It will be

observed, however, that Strong's ranges are slightly lower, suggesting a small personal error.

For the Indians, Strong's range for both sexes is within that of Hallowell's, and yet Strong's mean is lower. This is probably due, for the most part, to the small series. In any case it does not appear that these Indians are very different in head length from the Cree or Chipewyans.

TABLE 39.—HEAD LENGTH
(*In millimeters*)

Observer	Number	Range	Mean ±p.e.	S.D. ±p.e.	C.V. ±p.e.	×p.e.
			Labrador Eskimo: Male			
Strong	58	177–204	192.17±0.55	6.27±0.39	3.26±0.20	....
Lee 9	37	184–196	192.89±0.68	6.12±0.48	3.17±0.25	0.83
Sornberger 17		*179–207*				
Pittard 8		188–200				
Virchow 3		188–205				
Duckworth	11	?	191.2	....	....	....
			Labrador Eskimo: Female			
Strong	79	170–196	185.04±0.42	5.55±0.30	3.00±0.16	....
Lee 10	21	*172*–193	189.48±0.80	5.43±0.56	2.86±0.30	**4.93**
Sornberger 3		185–192				
Pittard 6		186–*197*				
Virchow 2		189–192				
Duckworth	10	?	190.2	....	....	....
Labrador			*Indian: Male*			
Strong	11	180–201	189.4	....	....	....
Hallowell	67	178–208	194.50±0.56	6.80±0.40	3.40±0.20	....
Cree						
Grant	25	183–201	193.20±0.67	4.94±0.47	2.56±0.24	....
Chipewyan						
Grant	43	180–204	193.50±0.56	5.41±0.39	2.80±0.20	....
Labrador			*Indian: Female*			
Strong	7	180–188	184.1	....	....	....
Hallowell	54	173–205	187.30±0.59	6.40±0.42	3.40±0.22	....
Chipewyan						
Grant	21	180–195	186.60±0.58	3.96±0.41	2.12±0.22	....

When we examine these figures in the light of the comparative lists compiled by Shapiro (1931) and Seltzer (1933) for the Eskimos there is little apparent order. Several reasons can be advanced to account for this. In the first place, a strict east-west arrangement ignores the cultural background. In the second, small series, just as in Labrador, give means deviating widely from the true means. Third, variations in head length may reflect differences both in shape and size. The last fact makes it necessary to postpone further comparison until head breadth has been examined. All that can be said here is that head length among the Labrador Eskimos is in the lower part of the range of all Eskimo groups and about the same as that for the Labrador and other northern Indians.

HEAD BREADTH

When the earlier measurements of Pittard and Virchow are combined with those of Lee and Sornberger (Table 40) a mean is obtained for the males that is higher than that of either Strong or Duckworth, and the difference is statistically significant. In the case of the females the difference is much less and hence not statistically significant. It will be observed that throughout both the Eskimos and Indians, Strong's range is below the others. We have seen (Table 33) that Strong got a lower figure for this dimension than either Langford or Michelson. I would suggest, therefore, that this constant personal error accounts for Strong's lower means.

TABLE 40.—HEAD BREADTH
(*In millimeters*)

Observer	Number	Range	Mean ±p.e.	S.D. ±p.e.	C.V. ±p.e.	×p.e.
			Labrador Eskimo: Male			
Strong	58	133–164	148.31±0.45	5.09±0.32	3.43±0.22	....
Lee* 9, Sornberger 17, Pittard 8, Virchow 3	37	*138*–154, 143–*168*, 146–154, 146–152	151.49±0.73	6.56±0.51	4.33±0.34	3.70
Duckworth	11	?	147.6	....	....	....
			Labrador Eskimo: Female			
Strong	79	130–151	142.26±0.40	5.21±0.28	3.66±0.20	....
Lee 10, Sornberger 3, Pittard 6, Virchow 2	21	141–152, *124*–*160*, 142–147, 131–143	143.72±1.00	6.77±0.70	4.71±0.49	1.35
Duckworth	10	?	141.8	....	....	....
			Indian: Male			
Labrador						
Strong	11	131–155	144.1	....	....	....
Hallowell	67	145–167	156.80±0.39	4.70±0.27	3.00±0.17	....
Cree						
Grant	25	141–156	150.00±0.63	4.70±0.45	3.13±0.30	....
Chipewyan						
Grant	44	141–162	153.70±0.44	4.35±0.31	2.83±0.20	....
			Indian: Female			
Labrador						
Strong	7	136–149	144.0	....	....	....
Hallowell	54	142–165	151.70±0.34	3.70±0.24	2.40±0.16	....
Chipewyan						
Grant	21	141–156	148.60±0.52	3.54±0.37	2.38±0.25	....

*In 1901 Boas reported a head width of 149 for 10 individuals measured by Lee.

As in the case of head length no perceptible order exists in Shapiro's and Seltzer's comparative lists, and the same explanation applies. However, the Labrador figures for head breadth, both Eskimo and Indian, do not appear to be so low in the range of the other groups as in the case of head length.

CEPHALIC INDEX

The earlier figures on the cephalic index of the male Labrador Eskimos vary from 75.5 (Virchow, 3 individuals) to 77 (Duckworth, 11 individuals). By combining the data of Virchow and Pittard with those of Lee and Sornberger (Table 41), we get a mean index of 78.6 for the males, which is not significantly different from Strong's figure of 77.3. Similarly the difference between the female means is not significant.

TABLE 41.—CEPHALIC INDEX

Observer	Number	Range	Mean ±p.e.	S.D. ±p.e.	C.V. ±p.e.	×p.e.
			Labrador Eskimo: Male			
Strong......	58	69.6–83.6	77.28±0.28	3.21±0.20	4.15±0.26	....
Lee.........	9	75.0–80.2				
Sornberger..	17 } 37	*72.9–89.4*	78.61±0.43	3.92±0.31	4.99±0.39	2.61
Pittard.....	8	73.0–79.4				
Virchow....	3	74.1–77.6				
Duckworth..	11	?	77.0	....	....	....
			Labrador Eskimo: Female			
Strong......	79	70.6–83.7	76.94±0.22	2.94±0.16	3.82±0.20	....
Lee.........	10	72.7–*83.7*				
Sornberger..	3 } 21	*67.0*–83.3	75.88±0.55	3.77±0.39	4.97±0.52	1.80
Pittard.....	6	73.1–77.4				
Virchow....	2	68.2–75.7				
Duckworth..	10	?	74.5	....	....	....
Labrador			*Indian: Male*			
Strong........	11	68.2–80.6	76.1	....	....	....
Hallowell.....	74	74–86	80.60±0.24	3.00±0.17	3.70±0.20	....
Boas (1895)...	79	74–93	81.43±0.24	3.21±0.17	3.94±0.21	2.44
Cree						
Grant........	25	73–81	77.60±0.26	1.92±0.18	2.47±0.24	....
Boas.........	81	74–87	79.80±0.19	2.60±0.14	3.26±0.17	**6.88**
Chipewyan						
Grant........	43	73–85	79.30±0.23	2.25±0.16	2.84±0.21	....
Labrador			*Indian: Female*			
Strong........	7	75.6–79.7	78.2	....	....	....
Hallowell.....	58	74–90	81.10±0.27	3.10±0.19	3.80±0.24	....
Chipewyan						
Grant........	21	75–83	79.60±0.25	1.69±0.18	2.12±0.22	....

As for the Indians, Strong gets means well below those of Hallowell. In turn, Hallowell's mean for the males agrees with that of Boas (1895) for the Montagnais, and is close to Grant's figures for the Cree and Chipewyans. Although there are few individuals in Strong's series of Indians, still, in view of his good results in the case of the Eskimo, it is reasonable to believe that his Indians were somewhat different from those of Hallowell. It is not impossible that the Labrador Indian was longer-headed before becoming admixed with the White, but admittedly this is contrary to Sullivan's observations (1920) on mixed-blood Sioux.

I would point out also that, whereas the female Eskimo in Table 41 have relatively longer heads than the males, in the Indians the opposite is true. This, I am told, is probably due to the fact that the Indian women braid their hair on the side, thus rendering it difficult to obtain the true maximum breadth. On the other hand, this sex difference seems to be peculiar to the two groups. Seltzer (1933) says of the Eskimos:

> It must not pass unnoticed that, with the exception of the Mackenzie, all the female groups have lower mean cephalic indices than the corresponding males (p. 327).

A higher mean cephalic index for the Indian females, as compared with the males, appears in Hrdlička's studies of the Chippewa (1916), Sioux (1931), and Pueblos (1935).

The relationship of this index on the living head and the skull has received considerable attention (see Stewart, 1936b). A dolichocranial group may reasonably be expected to have had an average index at least 1.5 units higher in life. We have seen (Table 4) that the male Labrador crania from the old stone graves have a cranial index of 71.8; that in recent grave crania this has increased to 72.6 (Table 11). In contrast to the cephalic index of 77.3 (Strong) for the living today, the above figures are 5.5 and 4.7 units lower, respectively.

Turning to Greenland, we see a like condition: cranial index, 71.7 (Table 4); cephalic index, 76.8 (Deniker, 1913); difference, 5.1 units. Also, quoting Hansen (1914):

> As will appear from the special investigation of the skulls to follow below, their average index is 72.1. . . , that is to say, they are pronouncedly dolichocephalic. If, for convenience, we consider the two sexes under one head, the average index for the 91 men and women measured on the East coast is 76.4. . . , that is to say, larger by 4.3 than the index of the skulls, and the living population thus turns out to be mesaticephalic (p. 161).

For comparison I give similar figures for two mesocranial groups from Alaska:

	Skulls	Living	Difference	
Nunivak Island	75.0(46)	78.6(19)	3.6	Hrdlička, 1930
St. Lawrence Island	77.1(153)	79.7(63)	2.6	

These examples from among the Eskimos all show a larger difference between the indices of the head and skull than would be expected on theoretical grounds. This is to be accounted for partly by the fact that the living and dead are not the same individuals, but. rather, different and sometimes inadequate samples of the population. Hansen (1914) has suggested another explanation:

> The question now is whether this difference is to be regarded as evidence that the skulls have belonged to a more dolichocephalous, and perhaps older, tribe than that now living, or whether it should be ascribed to special circumstances in the measuring. . . .
>
> Quite apart from the intrinsic improbability of the first alternative, there seem to be no grounds for doubting that the cephalic index of the living East Greenlanders is considerably greater than that of their skulls, notably on account of the powerful development of their masticating muscles, of which the musc. temporalis alone might easily increase the latitudinal diameter by the few millimeters in question. . . .
>
> Even the more careful investigations of recent times do not seem to have settled the question; . . . the difference in question must naturally be greater in a vigorous primitive race like the East Greenlanders, than in the population of European towns, which latter have furnished the materials for most of these investigations, where persons emaciated by sickness must often have been the subjects of examination (p. 161).

It is true on theoretical grounds, as I have shown (1936b, p. 136), that a disproportion in the thicknesses of the tissues of the head, favoring those laterally (the temporal muscles), increases the disproportion between the cranial and cephalic indices, and especially in dolichocranic skulls. However, it must not be overlooked that the use of white man's food and customs by the Eskimos undoubtedly leads on the one hand to developmental changes, and on the other to decreased activity of the temporal muscles. I believe, therefore, that in Labrador the Eskimo skull has become more brachycranic as a result of changed nutrition. Evidence of this new type is already apparent in the "recent grave" skulls (Table 11). It seems probable also that a similar change has occurred on the west coast of Greenland, which has long been in contact with Whites, and from where Hansen (1914) reports a cephalic index of 78.1 for 21 men (stature 157.6 cm.) as compared with Poulsen's 76.5 for 29 men of the east coast (stature 161.1 cm.).

This explanation, in which a rounding of the skull accompanies the decreased activity of the temporal muscles, would seem to be a re-statement of the old theory attributing the shaping of the skull to the temporal muscles. This implication is not intended. I believe that the essential factor is altered nutrition. We have yet very little knowledge regarding the effect of malnutrition during the developmental period upon the shape of the skull.

Again, I may call attention to the lack of agreement between the figures for the Cree (Grant, 77.6; Boas, 79.8). It would appear that the "truly startling" results obtained by Seltzer (1933, p. 363) with Shapiro's "statistical device" were determined partly by the series used.

HEAD HEIGHT

This is one of the less satisfactory measurements, owing to the use of different instruments, techniques, and landmarks (see Howells, 1938). Of the older data, Virchow defines his merely as "Öhrhöhe"; Pittard uses the phrase "hauteur du crâne." Duckworth gives two head heights: (1) "auriculo-bregmatic" and (2) stature less height of auditory meatus from ground. Presumably the method used in each of these cases was either projection or subtraction. However, the results given by Duckworth do not agree. Thus, the male auriculo-bregmatic height is 140.4, whereas by subtracting from stature the height of auditory meatus from ground we get 121 for the males. Strong used the projection method of Martin. Two other methods

TABLE 42.—HEAD HEIGHT
(*In millimeters*)

Observer	No.	Range	Mean ±p.e.	S.D. ±p.e.	C.V. ±p.e.	×p.e.
			Eskimo: Male			
Labrador						
Strong	58	114–152	132.34±0.71	7.98±0.50	6.04±0.38	....
Pittard	8	139–149	(142.5)	....	....	....
Virchow	3	121–124	(123.7)	....	....	....
Duckworth	10?	?	(140.4)	....	....	....
Western Alaska						
Moore*	63	120–149	132.27±0.40	4.76±0.28	3.60±0.22	0.08
Collins and Stewart†	38	124–139	130.90±0.40	3.61±0.28	2.76±0.21	1.76
Hrdlička (1933)	174	128–151	139.0	....	....	....
			Eskimo: Female			
Labrador						
Strong	79	100–154	126.20±0.73	9.57±0.51	7.59±0.41	....
Pittard	6	129–140	(134.5)	....	....	....
Virchow	2	113–121	(117.0)	....	....	....
Duckworth	11?	?	(133.5)	....	....	....
Western Alaska						
Moore	48	120–137	127.58±0.41	4.25±0.29	3.33±0.23	1.64
Collins and Stewart	27	122–139	128.33±0.56	4.29±0.39	3.34±0.31	2.32
			Indian: Male			
Labrador						
Strong	10	109–136	(123.8)	....	....	....
Hallowell	41	125–145	134.20±0.49	4.70±0.35	3.50±0.26	....
Chippewa						
Hrdlička (1916)	17	129–149	137.8	....	....	....
Sioux						
Hrdlička (1931)	72	121–146	135.6	....	....	....
			Indian: Female			
Labrador						
Strong	7	111–132	(118.6)	....	....	....
Hallowell	12	121–144	133.2	....	....	....
Chippewa						
Hrdlička	42	127–139	133.6	....	....	....
Sioux						
Hrdlička	36	120–140	130.8	....	....	....

* See Hrdlička (1930): St. Lawrence Island.
† See Hrdlička (1930): Nunivak Island and Hooper Bay.

were used in obtaining the comparative data given in Table 42: (1) Hrdlička's method (1920) for the data from western Alaska, and on the Chippewa and Sioux; (2) Todd's head spanner used by Hallowell on the Labrador Indians. It may be pointed out in addition that these different methods involve different landmarks: the projection methods generally use tragion; Hrdlička's method uses the floor of the auditory meatus; Todd's method uses the roof of the auditory meatus (porion).

In view of all these complicating factors the data in Table 42 can serve only as a summary of the information available, not as strictly comparable data. A surprising thing about these findings is that Strong's figures for the Labrador Eskimo compare well with

TABLE 43.—HEIGHT-LENGTH INDEX

Observer	No.	Range	Mean ±p.e.	S.D. ±p.e.	C.V. ±p.e.	×p.e.
			Eskimo: Male			
Labrador						
Strong	58	57.4–79.6	68.90±0.41	4.60±0.29	6.67±0.42	....
Pittard	8	70.6–76.4	(73.1)	....	....	....
Virchow	3	59.0–66.0	(62.3)	....	....	....
Duckworth	?	?	(73.5)	....	....	....
Western Alaska						
Moore*	63	61.5–74.7	68.47±0.24	2.89±0.17	4.22±0.25	0.90
Collins and Stewart*	38	63.2–73.6	67.37±0.26	2.38±0.18	3.53±0.27	**3.19**
Hrdlička (1933)	174	?	72.4†	....	....	....
			Eskimo: Female			
Labrador						
Strong	79	57.8–86.0	68.22±0.36	4.81±0.26	7.05±0.38	....
Pittard	6	67.0–73.3	(69.8)	....	....	....
Virchow	2	59.8–63.0	(61.4)	....	....	....
Duckworth	?	?	(70.7)	....	....	....
Western Alaska						
Moore	48	64.1–75.4	68.72±0.19	2.00±0.14	2.91±0.20	1.22
Collins and Stewart	27	65.1–74.7	68.04±0.26	2.02±0.18	2.97±0.27	0.41
			Indian: Male			
Labrador						
Strong	10	59.3–69.5	(65.2)	....	....	....
Hallowell	41	65 –74	68.90±0.27	2.60±0.19	3.70±0.28	....
Chippewa						
Hrdlička (1916)	17	67.0–72.2	69.4	....	....	....
Sioux						
Hrdlička (1931)	72	62.6–73.1	68.1	....	....	....
			Indian: Female			
Labrador						
Strong	7	59.4–71.7	(64.4)	....	....	....
Hallowell	12	66 –82	72.5	....	....	....
Chippewa						
Hrdlička	42	65.7–74.3	70.4	....	....	....
Sioux						
Hrdlička	36	64.0–76.4	68.6	....	....	....

*See Hrdlička (1930).
†Calculated from means.

those for the Western Eskimo, whereas his figures for the Labrador Indians disagree completely with those of Hallowell and Hrdlička. In the case of the Eskimos, Strong's range is large and his standard deviation high. Measuring larger numbers of Indians Strong might have gotten more comparable results. This is evidently a case where considerable error in the individual measurements disappears in the mean.

HEIGHT-LENGTH INDEX

It may be remarked in connection with Table 43 that the results shown are as reliable as the individual measurements from which the index is derived; Strong's large range of head height is reflected here. Compared with the Western Eskimo the Labrador Eskimo show almost no difference, as regards this index, that is of statistical significance.

TABLE 44.—MINIMUM FRONTAL DIAMETER
(*In millimeters*)

Observer	No.	Range	Mean ±p.e.	S.D. ±p.e.	C.V. ±p.e.	×p.e.
			Eskimo: Male			
Labrador						
Strong	52	94–114	105.36±0.37	3.96±0.26	3.76±0.25	....
Pittard	8	109–121	(115.8)	....	....	....
Western Alaska						
Moore*	63	94–124	109.41±0.43	5.04±0.30	4.60±0.28	**7.10**
Collins and Stewart*	39	96–114	104.41±0.47	4.33±0.33	4.15±0.32	1.53
Hrdlička (1933)	165	92–116	103.0	....	....	....
			Eskimo: Female			
Labrador						
Strong	78	95–112	102.50±0.27	3.55±0.19	3.46±0.19	....
Pittard	6	110–115	(112.7)	....	....	....
Western Alaska						
Moore	48	97–115	105.88±0.41	4.22±0.29	3.99±0.27	**6.90**
Collins and Stewart	27	98–110	104.04±0.44	3.37±0.31	3.24±0.30	2.96
			Indian: Male			
Labrador						
Strong	11	96–114	107.3	....	....	....
Hallowell	41	102–128	112.30±0.58	5.50±0.41	4.90±0.36	....
Cree						
Grant	25	91–112	103.20±0.63	4.69±0.45	4.54±0.43	....
Chipewyan						
Grant	44	94–118	104.20±0.45	4.39±0.32	4.16±0.30	....
Chippewa						
Hrdlička (1916)	17	103–114	107.6	....	....	....
Sioux						
Hrdlička (1931)	72	93–114	106.4	....	....	....
			Indian: Female			
Labrador						
Strong	7	102–109	104.6	....	....	....
Hallowell	29	99–130	111.10±1.06	8.50±0.75	7.70±0.68	....
Chipewyan						
Grant	19	94–109	102.40±0.53	3.42±0.37	3.34±0.36	....
Chippewa						
Hrdlička	42	93–108	102.6	....	....	....
Sioux						
Hrdlička	36	94–113	103.0	....	....	....

* See Hrdlička (1930).

MINIMUM FRONTAL DIAMETER

Pittard is the only one giving figures for this dimension prior to those here presented. His results seem much too high. When Strong's figures (Table 44) are compared with those given by Hrdlička (1930, 1933) for western Alaska a significant difference appears only in the case of the St. Lawrence Islanders.

Hallowell notes (p. 366) that his figure for the minimum frontal diameter of the Labrador Indians is high as compared to other Indians. Here Strong's result is undoubtedly more correct. In taking this measurement it is possible for the inexperienced to fail to get minimum breadth.

TABLE 45.—FRONTO-PARIETAL INDEX

Observer	No.	Range	Mean ±p.e.	S.D. ±p.e.	C.V. ±p.e.	×p.e.
			Eskimo: Male			
Labrador						
Strong	52	63.1–79.4	71.30±0.31	3.36±0.22	4.71±0.31	....
Pittard	8	72.6–82.2	(78.0)	....	....	....
Western Alaska						
Moore*	63	61.8–77.6	71.02±0.26	3.05±0.18	4.30±0.26	0.70
Collins and Stewart*	38	61.9–71.5	67.44±0.26	2.43±0.19	3.60±0.28	**9.65**
Hrdlička (1933)	165	?	66.4†	....	....	....
			Eskimo: Female			
Labrador						
Strong	78	66.0–81.5	72.18±0.24	3.16±0.17	4.37±0.24	....
Pittard	6	75.9–80.3	(78.1)	....	....	....
Western Alaska						
Moore	48	65.5–75.9	71.55±0.28	2.90±0.20	4.06±0.28	1.70
Collins and Stewart	27	64.7–73.1	69.15±0.30	2.29±0.21	3.31±0.30	**7.97**
			Indian: Male			
Labrador						
Strong	11	61.9–85.5	74.7	....	....	....
Hallowell	41	63 –79	71.70±0.39	3.70±0.28	5.20±0.39	....
Chippewa						
Hrdlička (1916)	17	?	71.0†	....	....	....
Sioux						
Hrdlička (1931)	72	?	67.7†	....	....	....
			Indian: Female			
Labrador						
Strong	7	69.4–75.0	72.5	....	....	....
Hallowell	29	64 –84	72.80±0.66	5.30±0.47	7.30±0.65	....
Chippewa						
Hrdlička	42	?	72.0†	....	....	....
Sioux						
Hrdlička	36	?	66.7†	....	....	....

* See Hrdlička (1930).
† Calculated from means.

FRONTO-PARIETAL INDEX

This index expresses the relationship between the minimum forehead breadth and the maximum head breadth. It will be recalled that there is some evidence indicating that Strong failed to get maxi-

mum head breadth. This perhaps accounts for his higher fronto-parietal index. However, in the case of the Eskimos (Table 45) Strong's figures seem more nearly correct than Pittard's.

For the Labrador Indians neither Strong's nor Hallowell's figures for the fronto-parietal index can be correct, both being too high.

MAXIMUM BIZYGOMATIC DIAMETER

One of the things shown in Table 33 is that Strong did not always get maximum face breadth. This seems to be borne out by a comparison of his means and ranges for the Eskimo with those of the combined earlier groups (Table 46). The differences between these means is significant, at least in the case of the males.

TABLE 46.—MAXIMUM BIZYGOMATIC DIAMETER
(*In millimeters*)

Observer	Number	Range	Mean ±p.e.	S.D. ±p.e.	C.V. ±p.e.	×p.e.
			Labrador Eskimo: Male			
Strong	58	126–154	141.74±0.51	5.78±0.36	4.08±0.26	....
Lee* 9		*134*–149				
Sornberger 17	37	137–*156*	144.92±0.59	5.30±0.42	3.66±0.29	**4.09**
Pittard 8		140–149				
Virchow 3		141–152				
Duckworth	11	?	142.2	....	....	....
			Labrador Eskimo: Female			
Strong	79	112–149	133.35±0.54	7.14±0.38	5.35±0.29	....
Lee 10		*124*–142				
Sornberger 4	22	138–*144*	135.59±0.74	5.13±0.52	3.78±0.38	2.43
Pittard 6		134–141				
Virchow 2		132–137				
Duckworth	10	?	136.6	....	....	....
Labrador			*Indian: Male*			
Strong	11	134–150	141.7	....	....	....
Hallowell	67	136–159	147.20±0.40	4.90±0.28	3.30±0.19	....
Cree						
Grant	25	138–147	144.60±0.39	2.86±0.27	1.97±0.19	....
Chipewyan						
Grant	44	138–159	149.60±0.50	4.89±0.35	3.27±0.24	....
Labrador			*Indian: Female*			
Strong	7	128–144	134.3	....	....	....
Hallowell	54	126–149	139.30±0.42	4.60±0.30	3.20±0.21	....
Chipewyan						
Grant	21	132–150	141.90±0.74	5.03±0.52	3.54±0.37	....

* In 1901 Boas reported a face width of 142 for 10 individuals measured by Lee.

A similar showing appears likewise in the case of the Indians; Hallowell's higher figure is probably more nearly correct. It will be observed that the Labrador Indians thus fall between the Cree and Chipewyans.

The fact that the Labrador Eskimos and the Cree have equally narrow faces fits in with Seltzer's theory as to their relationship.

We may recall, however, that the old stone grave population of Labrador showed a slightly broader face than the recent grave population (Table 11). I would call attention also to the unusually small range for this measurement in the Cree (S.D. 2.86±0.27), which would suggest that the mean is atypical. There is thus reason to believe that there has been a convergence in the face breadths of these two groups that can be explained otherwise than by close relationship.

CEPHALO-FACIAL INDEX

This index shows the relationship of the maximum breadths of head and face. The fact that Strong has not obtained the maximum of each of these dimensions is masked in Table 47; there is no statistically significant difference between Strong's figures and those of the combined earlier groups. According to Seltzer's table the nearest approach to the present Labrador figures is that for Hudson Bay (Birket-Smith).

TABLE 47.—CEPHALO-FACIAL INDEX

Observer	Number	Range	Mean ±p.e.	S.D. ±p.e.	C.V. ±p.e.	×p.e.
		Labrador Eskimo: Male				
Strong	58	85.1–107.4	95.66±0.38	4.29±0.27	4.49±0.28	....
Lee*	9	91.2– 99.3				
Sornberger	17	*86.2*– 99.3				
Pittard	8	93.3–*102.0*				
Virchow	3	96.6–100.0				
(Lee, Sornberger, Pittard, Virchow)	37		95.77±0.39	3.50±0.27	3.66±0.29	0.20
Duckworth	11	?	96.3†	....	....	....
		Labrador Eskimo: Female				
Strong	79	77.8–107.7	93.78±0.39	5.16±0.28	5.50±0.30	....
Lee	10	*86.1*– 94.6				
Sornberger	3	90.0–*110.4*				
Pittard	6	93.0– 97.2				
Virchow	2	92.3–104.6				
(Lee, Sornberger, Pittard, Virchow)	21		94.35±0.77	5.26±0.55	5.58±0.58	0.66
Duckworth	10	?	96.3†	....	....	....
		Indian: Male				
Labrador						
Strong	11	90.5–109.5	98.6	....	....	....
Hallowell	67	86 –101	94.00±0.23	2.80±0.16	2.90±0.17	....
Cree						
Grant	25	93 –101	96.60±0.31	2.27±0.22	2.35±0.22	....
Chipewyan						
Grant	44	91 –101	97.60±0.25	2.49±0.18	2.55±0.18	....
		Indian: Female				
Labrador						
Strong	7	86.5– 97.9	93.2	....	....	....
Hallowell	54	84 – 97	92.50±0.31	3.40±0.22	3.70±0.24	....
Chipewyan						
Grant	21	87 – 99	95.50±0.42	2.83±0.30	2.96±0.31	....

* In 1901 Boas reported an index of 95 for 10 males measured by Lee.
† Calculated from means.

For the Labrador Indians Strong's small series give higher indices than Hallowell's. However, the latter is below those of Grant for the Cree and Chipewyans.

This index is of little value for differentiating Indian from Eskimo, as Shapiro has pointed out. Undoubtedly this relationship between head and face (a high index) is a generalized Mongolian character.

BIGONIAL DIAMETER

The earlier data from Labrador regarding the breadth of the angles of the lower jaw consist of small series measured by Duckworth and Virchow. In both cases the means are high, judging by other records. Strong's means are slightly lower than those for other Eskimo groups given for comparison in Table 48. This difference may or may not be due to personal error.

TABLE 48.—BIGONIAL DIAMETER
(In millimeters)

Observer	No.	Range	Mean ±p.e.	S.D. ±p.e.	C.V. ±p.e.	×p.e.
			Eskimo: Male			
Labrador						
Strong	58	100 –128	114.33±0.56	6.37±0.40	5.58±0.35	....
Virchow	3	116 –136	(125.0)	....	....	....
Duckworth	11?	?	(131.2)	....	....	....
East. Greenland						
Poulsen	26	104 –125	114.92±0.72	5.44±0.51	4.74±0.44	0.65
Coronation Gulf						
Jenness (1923)	82	100 –129	115.80±0.43	5.80±0.30	5.00±0.26	2.07
Western Alaska						
Moore*	63	102 –136	117.83±0.52	6.11±0.37	5.18±0.31	**4.47**
Hrdlička (1933)	165	102 –140	117.8	....	....	....
			Eskimo: Female			
Labrador						
Strong	79	94 –121	107.43±0.40	5.22±0.28	4.86±0.26	....
Virchow	2	116.5–117	(116.8)	....	....	....
Duckworth	10?	?	(126.2)	....	....	....
East. Greenland						
Poulsen	10	105 –119	111.8	....	....	....
Coronation Gulf						
Jenness	42	99 –120	110.30±0.58	5.60±0.41	5.00±0.37	**4.10**
Western Alaska						
Moore	48	101 –123	111.83±0.51	5.26±0.36	4.71±0.32	**6.77**
			Indian: Male			
Labrador						
Strong	11	96 –120	(109.3)	....	....	....
Hallowell	41	104 –132	117.30±0.67	6.40±0.48	6.70±0.42	....
			Indian: Female			
Labrador						
Strong	7	100 –109	(102.4)	....	....	....
Hallowell	28	101 –124	110.20±0.80	6.30±0.57	5.70±0.51	....

*See Hrdlička (1930).

In the case of the Indian, Strong's means are below Hallowell's. The latter gives figures comparable with those of the Western Eskimo. These seem to be a little high compared with other Indians.

GONIO-ZYGOMATIC INDEX

We have seen that Strong tends to get low means for both the bigonial and bizygomatic diameters. This fact is reflected in Table 49, where Strong's mean gonio-zygomatic index compares well with those of other Eskimo groups.

TABLE 49.—GONIO-ZYGOMATIC INDEX

Observer	No.	Range	Mean ±p.e.	S.D. ±p.e.	C.V. ±p.e.	×p.e.
			Eskimo: Male			
Labrador						
Strong	58	70.8–91.7	80.62±0.37	4.19±0.26	5.20±0.32	....
Virchow	3	78.9–89.5	(85.2)	....	....	....
Duckworth	?	?	(93.1)*	....	....	....
Eastern Greenland						
Poulsen	26	74.3–84.4	79.53±0.32	2.38±0.22	3.00±0.28	2.22
Coronation Gulf						
Jenness (1923)	82	66 –89	79.40±0.29	4.00±0.21	5.00±0.26	2.60
Western Alaska						
Moore†	63	71.1–92.0	79.91±0.32	3.79±0.23	4.74±0.28	1.45
Hrdlička (1933)	165	?	79.0*	....	....	....
			Eskimo: Female			
Labrador						
Strong	79	72.5–98.2	80.49±0.32	4.26±0.23	5.29±0.28	....
Virchow	2	85.4–88.2	(86.8)	....	....	....
Duckworth	?	?	(91.4)*	....	....	....
Eastern Greenland						
Poulsen	10	79.0–86.9	81.7	....	....	....
Coronation Gulf						
Jenness	42	71 –86	80.10±0.40	3.90±0.28	4.80±0.35	0.76
Western Alaska						
Moore	48	72.9–84.8	79.45±0.30	3.04±0.21	3.82±0.26	2.36
			Indian: Male			
Labrador						
Strong	11	67.8–84.4	77.0	....	....	....
Hallowell	41	73 –89	80.10±0.36	3.40±0.25	4.20±0.31	....
			Indian: Female			
Labrador						
Strong	7	73.6–78.1	75.4	....	....	....
Hallowell	28	73 –86	78.80±0.43	3.40±0.31	4.40±0.40	....

* Calculated from means.
† See Hrdlička (1930).

The poorer agreement in the case of the Indians is doubtless due to the smaller sizes of the series determining the figures upon which the index is based. Comparative data are generally lacking for the Indians, but it appears that the relationship between breadth of jaw and face is about the same in the Labrador Indians as in the Eskimos.

MENTON-CRINION

As mentioned on page 78 Strong began by measuring menton-crinion and forehead height (nasion-crinion) directly, but with subject 150 he changed from menton-crinion to menton-nasion. Thus, for these two face heights there are direct measurements in only about half of the cases. In the remaining cases menton-crinion can be

obtained by the addition of menton-nasion with forehead height; menton-nasion by subtraction of forehead height from menton-crinion. It will be recognized, however, that both forehead height and menton-nasion involve the landmark "nasion," which the

TABLE 50.—MENTON-CRINION
(*In millimeters*)

Observer	No.	Range	Mean ±p.e.	S.D. ±p.e.	C.V. ±p.e.	×p.e.
			Eskimo: Male			
Labrador						
Strong	32*	178–222	200.22±1.18	9.89±0.83	4.83±0.42	....
	26†	196–230	(209.7)	....	....	....
Virchow	3	191–198	(194.3)	....	....	....
Western Alaska						
Moore‡	63	180–230	200.11±0.79	9.29±0.56	4.64±0.28	0.07
Collins and Stewart‡	39	175–209	193.23±0.87	8.11±0.62	4.20±0.32	4.75
Hrdlička (1933)	174	174–228	197.6	....	....	....
			Eskimo: Female			
Labrador						
Strong	45*	172–200	186.87±0.70	6.99±0.50	3.74±0.27	....
	34†	181–222	(200.1)	....	....	....
Virchow	2	177–192	(184.5)	....	....	....
Western Alaska						
Moore	47	167–201	188.13±0.78	7.88±0.55	4.19±0.33	1.20
Collins and Stewart	27	164–206	184.37±1.20	9.23±0.85	5.00±0.46	1.80
			Indian: Male			
Labrador						
Strong	11*	178–199	188.7	....	....	....
Cree						
Grant	25	160–195	184.00±0.97	7.21±0.69	3.92±0.37	....
Chipewyan						
Grant	44	170–210	187.60±0.83	8.13±0.58	4.34±0.31	....
Chippewa						
Hrdlička (1916)	8	183–200	189.1	....	....	....
Sioux						
Hrdlička (1931)	72	171–216	194.2	....	....	....
			Indian: Female			
Labrador						
Strong	7*	170–177	(174.0)	....	....	....
Chipewyan						
Grant	21	160–195	180.80±1.13	7.70±0.80	4.26±0.44	....
Chippewa						
Hrdlička	10	172–190	181.5	....	....	....
Sioux						
Hrdlička	36	164–195	180.7	....	....	....

* Measured directly.
† By addition of menton-nasion and forehead height.
‡ See Hrdlička (1930).

beginner has difficulty in locating. All measurements involving this landmark must be examined very critically, hence I have distinguished between those cases in which the measurement was taken directly and those derived indirectly.

The only earlier figures for menton-crinion in the Labrador Eskimo are those of Virchow. These can hardly be reliable, since

they were taken on only three males and two females. However, it will be observed (Table 50) that these figures agree with the findings of Collins and Stewart for the Western Eskimo. Strong's direct measurements are higher than those of Virchow, but are close to those of Moore and Hrdlička for the Western Eskimo.

Strong's figures for menton-crinion as derived by the addition of menton-nasion and forehead height are considerably higher than his direct measurements. It is certain, therefore, that one or both of the constituent measurements are too large. This in turn implies that nasion was located too high in taking menton-nasion, or too low in taking forehead height, or both.

Strong's figure for the male Indians is in fair agreement with the comparative data; his figure for the females is low. Accepting these figures as approximately correct, it seems that the Indians, especially the Cree, have shorter faces than the Eskimo.

TABLE 51.—TOTAL (PHYSIOGNOMIC) FACIAL INDEX

Observer	No.	Range	Mean ±p.e.	S.D. ±p.e.	C.V. ±p.e.	×p.e.
			Eskimo: Male			
Labrador						
Strong	32	63.3–77.9	70.07±0.46	3.85±0.32	5.50±0.46	....
Virchow	3	71.2–79.6	(75.5)	....	....	....
Western Alaska						
Moore*	62	64.8–83.2	73.66±0.32	3.78±0.23	5.14±0.31	6.41
Collins and Stewart*	39	70.2–84.6	77.73±0.35	3.22±0.24	4.14±0.32	11.61
Hrdlička (1933)	174	67.5–86.7	75.4	....	....	....
			Eskimo: Female			
Labrador						
Strong	45	57.4–77.5	70.27±0.40	4.03±0.29	5.73±0.41	....
Virchow	2	71.4–74.6	(73.0)	....	....	....
Western Alaska						
Moore	47	68.9–82.4	74.68±0.31	3.14±0.22	4.20±0.29	8.65
Collins and Stewart	27	70.9–84.7	78.01±0.42	3.21±0.29	4.12±0.38	13.34
			Indian: Male			
Labrador						
Strong	11	69.4–79.4	75.2	....	....	....
Chippewa						
Hrdlička(1916)	8	74.8–83.4	78.7	....	....	....
Sioux						
Hrdlička(1931)	72	69.0–86.1	77.4	....	....	....
			Indian: Female			
Labrador						
Strong	7	72.3–84.2	77.2	....	....	....
Chippewa						
Hrdlička	10	72.6–82.6	77.3	....	....	....
Sioux						
Hrdlička	36	71.3–90.4	80.8	....	....	....

*See Hrdlička (1930).

TOTAL (PHYSIOGNOMIC) FACIAL INDEX

Only the indices derived from Strong's direct measurement of menton-crinion are considered in Table 51. Since this index expresses the relationship of the bizygomatic diameter to menton-crinion, and since Strong may not have obtained the maximum for the former in all cases, his mean index is low compared to the values for the Western Eskimo. The index for the Labrador Indians may be low for the same reason.

MENTON-NASION

It has already been explained in connection with menton-crinion why Strong's measurements are divided into two groups. Also, it has been pointed out that the landmark "nasion" is difficult to locate in

TABLE 52.—MENTON-NASION
(*In millimeters*)

Observer	Number	Range	Mean ± p.e.	S.D. ± p.e.	C.V. ± p.e.	× p.e.
			Labrador Eskimo: Male			
Strong	26*	116–148	130.04±0.81	6.13±0.57	4.72±0.44	....
	32†	108–150	(124.8)	....	....	....
Lee 9		118–129				
Sornberger 17	29	*110–131*	121.34±0.66	5.27±0.47	4.34±0.38	8.36
Virchow 3		125–131				
Duckworth	11?	?	127.0	....	....	....
			Labrador Eskimo: Female			
Strong	34*	105–140	123.47±0.88	7.58±0.62	6.13±0.50	....
	45†	103–142	(115.4)	....	....	....
Lee 10		111–117				
Sornberger 4	16	*99*–116	112.8	....	....	....
Virchow 2		117–*121*				
Duckworth	10?	?	116.5	....	....	....
			Indian: Male			
Labrador						
Strong	11†	116–128	(121.1)	....	....	....
Hallowell	41	110–134	119.70±0.48	4.70±0.35	3.90±0.29	....
Cree						
Grant	25	113–134	124.60±0.83	6.13±0.58	4.92±0.47	....
Chipewyan						
Grant	44	113–143	125.30±0.68	6.64±0.48	5.30±0.38	....
			Indian: Female			
Labrador						
Strong	7†	104–116	(109.7)	....	....	....
Hallowell	29	103–122	112.20±0.64	5.10±0.45	4.50±0.40	....
Chipewyan						
Grant	21	107–128	120.10±0.77	5.19±0.54	4.32±0.45	....

* Measured directly.
† By subtraction of forehead height from menton-crinion.

the living and that marked variations in the means must be looked upon with suspicion until carefully verified. By reference to Seltzer's Table 9 it will be seen that for menton-nasion the male means range from 123.5 (Hudson Bay, Birket-Smith) to 131.5 (Mackenzie, Boas). If we add to this the combined series of Lee, Sornberger, and Virchow

(Table 52) for the Labrador Eskimo, we get the range extended downward to 121.3. A range of 1 cm. for the means of 18 Eskimo groups may be possible, but, in view of the fact that many of the groups have been measured by amateurs, needs verification.

The great range between the two Labrador Eskimo series (Lee, Sornberger, Virchow; Strong) suggests that Strong is locating nasion too high, and the others are locating it too low.

Strong's figure for the male Labrador Indians agrees with that of Hallowell, but both are below those of Grant for the Cree and Chipewyans.

Since this measurement carries so much suspicion with it, I will not give the lower (morphologic) facial index.

FOREHEAD HEIGHT

In Table 53 are shown two series for the Labrador Eskimo in which forehead height was measured directly. The rather good

TABLE 53.—FOREHEAD HEIGHT
(*In millimeters*)

Observer	Number	Range	Mean ±p.e.	S.D. ±p.e.	C.V. ±p.e.	×p.e.
			Eskimo: Male			
Labrador						
Strong	58	56–97	77.33±0.68	7.72±0.48	9.99±0.62	....
Sornberger 17, Virchow 3	20	56–91, 64–69	73.2	....	....	....
Western Alaska						
Moore*	62	57–89	73.35±0.51	5.96±0.36	8.13±0.49	**4.68**
Collins and Stewart*	39	52–78	67.23±0.58	5.38±0.41	8.00±0.61	**11.35**
Hrdlička (1933)	174	53–86	71.6	....	....	....
			Eskimo: Female			
Labrador						
Strong	79	56–90	73.58±0.55	7.30±0.39	9.91±0.53	....
Sornberger 4, Virchow 2	6	51–79, 60–79	68.5	....	....	....
Western Alaska						
Moore	47	59–82	72.66±0.55	5.62±0.39	7.73±0.54	1.18
Collins and Stewart	27	54–74	63.63±0.68	5.22±0.48	8.21±0.75	**11.44**
			Indian: Male			
Labrador						
Strong	11	57–78	67.6	....	....	....
Chippewa						
Hrdlička (1916)	8	57–75	64.6	....	....	....
Sioux						
Hrdlička (1931)	72	54–78	64.8	....	....	....
			Indian: Female			
Labrador						
Strong	7	55–69	64.3	....	....	....
Chippewa						
Hrdlička	10	53–68	61.9	....	....	....
Sioux						
Hrdlička	36	48–71	59.3	....	....	....

NOTE: Strong and Sornberger measured forehead height directly. All the others determined it indirectly by subtracting menton-nasion from menton-crinion.

* See Hrdlička (1930).

agreement of the Sornberger-Virchow means with those from western Alaska suggests that Strong's figures are too high; in other words, that he located nasion too low for the purposes of this measurement. Likewise, Strong's figures for the Labrador Indians are high as compared to Hrdlička's for the Chippewa and Sioux.

NOSE HEIGHT

The earlier data on nose height in the male Labrador Eskimos vary from 51.9 (Pittard) to 58.7 (Virchow, 3 individuals). When these series are combined with those of Lee and Sornberger (Table 54)

TABLE 54.—NOSE HEIGHT
(*In millimeters*)

Observer	Number		Range	Mean ±p.e.	S.D. ±p.e.	C.V. ±p.e.	×p.e.
			Labrador Eskimo: Male				
Strong	58		45–73	56.98±0.48	5.46±0.34	9.58±0.60	....
Lee	9		46–56				
Sornberger	17	37	44–59	52.00±0.42	3.76±0.29	7.22±0.57	7.78
Pittard	8		50–54				
Virchow	3		57–*60*				
Duckworth	11		?	57.4	....	....	....
			Labrador Eskimo: Female				
Strong	79		44–71	54.82±0.33	4.37±0.23	7.97±0.43	....
Lee	10		*43*–52				
Sornberger	4	22	46–48	48.27±0.41	2.88±0.29	5.96±0.61	12.36
Pittard	6		44–52				
Virchow	2		51–*53*				
Duckworth	4		?	51.25	....	....	....
Labrador			*Indian: Male*				
Strong	11		52–63	57.3	....	....	....
Hallowell	41		44–63	51.80±0.41	3.90±0.29	7.50±0.56	....
Cree							
Grant	25		50–59	54.70±0.37	2.72±0.26	4.97±0.47	....
Chipewyan							
Grant	44		47–62	55.10±0.31	3.07±0.22	5.58±0.40	....
Labrador			*Indian: Female*				
Strong	7		50–59	56.4	....	....	....
Hallowell	29		41–54	47.10±0.41	3.30±0.29	7.00±0.62	....
Chipewyan							
Grant	20		41–56	53.70±0.57	3.93±0.42	7.32±0.78	....

a mean is obtained, 52, which is significantly different from Strong's mean, 57, and yet is well below the general Eskimo figure (see Shapiro's Table 10); indeed, Strong's mean is very close to the general mean of the Eskimos.

Nose height, of course, is another measurement involving the landmark "nasion." For this reason, and in view of the above facts, it is difficult to say whether Strong is locating nasion too high in this case; but Table 33 suggests this, and we have noted the same tendency in connection with the measurement of menton-nasion. On

the other hand, it is not impossible that many of the earlier group measuring the Labrador Eskimo have located nasion too low.

An irregular technique is perhaps reflected in the extreme upper range of Strong's measurements. This has resulted in standard deviations which in the case of the males exceeds Howells' (1936) computed "mean sigma" plus three times its standard deviation.

The same situation exists in the data for the Labrador Indian; Strong's figures are much higher than those of Hallowell's. Still, it should be noted that Hallowell's figures are well below Grant's for the Cree and Chipewyans. Hrdlička reports 59.4 and 56.6 for the male Sioux and Chippewa, respectively.

NOSE BREADTH

The earlier data on nose breadth in the male Labrador Eskimo vary from 36.8 (Duckworth) to 39 (Virchow, 3 individuals). By combining the earlier series (Table 55) we get a mean of 38.3, which is not significantly different from Strong's mean of 38. The difference is slightly greater in the case of the females, but still this is

TABLE 55.—NOSE BREADTH
(*In millimeters*)

Observer	Number	Range	Mean ±p.e.	S.D. ±p.e.	C.V. ±p.e.	×p.e.
			Labrador Eskimo: Male			
Strong	58	32–45	37.95±0.27	3.04±0.19	8.02±0.50	....
Lee 9		35–41				
Sornberger 17	37	34–44	38.27±0.29	2.61±0.20	6.81±0.53	0.80
Pittard 8		35–41				
Virchow 3		37–42				
Duckworth	10	?	36.8	....	....	....
			Labrador Eskimo: Female			
Strong	79	28–42	34.11±0.21	2.83±0.15	8.30±0.45	....
Lee 10		30–38				
Sornberger 4	22	33–40	35.04±0.37	2.57±0.26	7.32±0.74	2.21
Pittard 6		32–38				
Virchow 2		32–35				
Duckworth	4	?	32.0	....	....	....
			Indian: Male			
Labrador						
Strong	10	34–45	39.6	....	....	....
Hallowell	41	29–46	37.60±0.36	3.40±0.25	9.00±0.67	....
Cree						
Grant	25	31–45	38.20±0.42	3.14±0.30	8.23±0.78	....
Chipewyan						
Grant	44	31–45	39.70±0.33	3.28±0.24	8.26±0.59	....
			Indian: Female			
Labrador						
Strong	7	33–44	38.7	....	....	....
Hallowell	29	29–40	35.10±0.36	2.90±0.26	8.10±0.72	....
Chipewyan						
Grant	20	33–41	36.20±0.33	2.22±0.24	6.12±0.65	....

not significant. According to the comparative data assembled by Shapiro these figures are close to the general mean of the Eskimos.

Strong's means for the Indians are slightly higher than Hallowell's, and closer to Grant's means for the Cree and Chipewyans. The Indians appear to have absolutely broader noses than the Eskimos. However, these northern Indians seem to have absolutely narrower noses than those to the south, for Hrdlička reports breadths of 41.8 and 42.8 for the male Sioux and Chippewa, respectively.

NASAL INDEX

From the wide range of variation in the means of the earlier data on nose height and breadth for the male Labrador Eskimo, as noted under these respective headings, it is not surprising that the mean nasal indices from these same sources vary from 64.1 (Duckworth) to 72.3 (Pittard). The mean for the combined earlier series for male Labrador Eskimos (Table 56) goes still higher, 73.8. Not only is this figure higher than any of those assembled by Shapiro in his comparative table, but it is significantly different from Strong's mean of 67. The latter figure is more nearly in line with

TABLE 56.—NASAL INDEX

Observer	Number	Range	Mean ± p.e.	S.D. ± p.e.	C.V. ± p.e.	× p.e.
			Labrador Eskimo: Male			
Strong	58	53.3–84.3	66.98 ± 0.65	7.38 ± 0.46	11.01 ± 0.69	....
Lee	9	*62.5*–89.1				
Sornberger	17	64.9–*90.9*				
Pittard	8	67.9–78.4				
Virchow	3	62.7–70.0				
(Lee, Sornberger, Pittard, Virchow)	37		73.81 ± 0.74	6.72 ± 0.53	9.10 ± 0.71	**6.97**
Duckworth	10	?	64.1	....	....	....
			Labrador Eskimo: Female			
Strong	79	47.5–78.7	62.54 ± 0.52	6.90 ± 0.37	11.03 ± 0.59	....
Lee	10	64.7–79.1				
Sornberger	4	68.8–*87.0*				
Pittard	6	70.6–78.7				
Virchow	2	*60.3*–68.6				
(Lee, Sornberger, Pittard, Virchow)	22		72.77 ± 0.86	5.95 ± 0.60	8.17 ± 0.83	**10.23**
Duckworth	4	?	62.4	....	....	....
			Indian: Male			
Labrador						
Strong	10	56.7–83.3	68.9	....	....	....
Hallowell	44	52–92	73.00 ± 0.81	8.00 ± 0.58	11.00 ± 0.79	....
Cree						
Grant	25	55–85	69.20 ± 1.01	7.49 ± 0.71	10.83 ± 1.03	....
Chipewyan						
Grant	44	55–85	71.90 ± 0.71	6.95 ± 0.50	9.67 ± 0.70	....
			Indian: Female			
Labrador						
Strong	7	61.0–75.9	68.6	....	....	....
Hallowell	29	67–93	74.80 ± 0.89	7.10 ± 0.63	9.50 ± 0.84	....
Chipewyan						
Grant	20	55–85	71.50 ± 1.19	7.89 ± 0.84	10.04 ± 1.07	....

the general mean of the Eskimos. A similar difference appears in the case of the females.

Strong's mean indices for the Labrador Indians fall well below those of Hallowell and agree with those of Grant on the Cree and Chipewyans. There is thus a suspicion that Hallowell's figures are too high, although we cannot be certain of this because they are still within the range of other American Indian groups.

The probabilities are that these northern Indians have a relatively broader nose than do the Eskimos.

EAR LENGTH

The ear is not commonly measured and there is thus little comparative data on this feature for the Eskimo. However, the few early measurements of ear length for the male Labrador Eskimo give

TABLE 57.—EAR LENGTH
(In millimeters)

Observer	Number	Range	Mean ±p.e.	S.D. ±p.e.	C.V. ±p.e.	×p.e.
			Eskimo: Male			
Labrador						
Strong	58	56–84	70.88±0.49	5.57±0.35	7.86±0.49	....
Pittard 8, Virchow 3	11	60–75, 62–70	67.2	....	....	....
Duckworth	11?	?	67.5	....	....	....
Western Alaska						
Moore*	63	64–86	73.94±0.42	4.98±0.30	6.74±0.40	4.78
Collins and Stewart*	39	60–81	69.13±0.53	4.89±0.37	7.07±0.54	2.43
Hrdlička (1933)	173	60–87	71.2	....	....	....
			Eskimo: Female			
Labrador						
Strong	79	51–82	66.47±0.48	6.34±0.34	9.54±0.51	....
Pittard 6, Virchow 2	8	60–71, 60–69	64.5	....	....	....
Duckworth	10?	?	63.6	....	....	....
Western Alaska						
Moore	48	58–77	67.29±0.44	4.49±0.31	6.68±0.46	1.26
Collins and Stewart	27	54–73	65.04±0.60	4.66±0.43	7.17±0.66	1.86
			Indian: Male			
Labrador						
Strong	11	60–71	(66.1)	....	....	....
Cree						
Grant	25	56–74	65.60±0.59	4.35±0.42	6.63±0.63	....
Chipewyan						
Grant	44	59–77	67.00±0.51	4.99±0.36	7.45±0.54	....
Chippewa						
Hrdlička (1916)	17	64–89	72.00	....	....	....
Sioux						
Hrdlička (1931)	72	61–84	73.3	....	....	....
			Indian: Female			
Labrador						
Strong	3	58–66	(63.0)	....	....	....
Chippewa						
Hrdlička	42	58–80	68.5	....	....	....
Sioux						
Hrdlička	36	62–78	70.5	....	....	....

*See Hrdlička (1930).

a mean of about 67. This figure is low compared with those for the Western Eskimo (Table 57). Strong's figure of 70.9 is more nearly in agreement with the latter. The same relationship holds for the females.

Strong's series of Indians are inadequate for reliable means. However, his mean for the males is close to those of Grant for the Cree and Chipewyans. On the other hand, Grant's figures are well below those of Hrdlička for the Sioux and Chippewa. It would be interesting if these northern Indians were intermediate in ear length between the Eskimos and the American Indians.

EAR BREADTH

The mean ear breadth for the Labrador Eskimo as obtained by Strong (Table 58) is in good agreement with the earlier data both from the same area and for the Western Eskimo.

TABLE 58.—EAR BREADTH
(*In millimeters*)

Observer	No.	Range	Mean ±p.e.	S.D. ±p.e.	C.V. ±p.e.	×p.e.
			Eskimo: Male			
Labrador						
Strong	58	27–45	37.45±0.33	3.77±0.24	10.06±0.63	....
Pittard	8	36–43	38.6	....	....	....
Duckworth	11?	?	36.1	....	....	....
Western Alaska						
Moore*	63	33–47	40.40±0.21	2.44±0.15	6.03±0.36	7.56
Collins and Stewart*	39	31–43	37.95±0.31	2.90±0.22	7.64±0.58	1.11
Hrdlička (1933)	173	32–45	37.7	....	....	....
			Eskimo: Female			
Labrador						
Strong	79	25–47	35.43±0.27	3.61±0.19	10.20±0.55	....
Pittard	6	34–39	36.2	....	....	....
Duckworth	10?	?	(30.2)	....	....	....
Western Alaska						
Moore	48	31–41	35.67±0.23	2.37±0.16	6.63±0.46	0.68
Collins and Stewart	27	27–39	34.41±0.31	2.42±0.22	7.04±0.65	2.49
			Indian: Male			
Labrador						
Strong	11	33–39	35.5	....	....	....
Cree						
Grant	25	29–39	35.20±0.28	2.09±0.20	5.95±0.57	....
Chipewyan						
Grant	44	33–43	36.80±0.23	2.30±0.16	6.23±0.45	....
Chippewa						
Hrdlička (1916)	17	35–43	38.8	....	....	....
Sioux						
Hrdlička (1931)	72	34–45	39.3	....	....	....
			Indian: Female			
Labrador						
Strong	3	32–35	(33.0)	....	....	....
Chippewa						
Hrdlička	42	33–42	37.7	....	....	....
Sioux						
Hrdlička	36	34–43	37.6	....	....	....

*See Hrdlička (1930).

For the male Labrador Indian, Strong's mean agrees with those of Grant for the Cree and Chipewyans, and all of these are inferior to Hrdlicka's means for the Sioux and Chippewa. We have noted a comparable relationship in the case of ear length. If true, this can only mean that these Indians have absolutely smaller ears than either the Eskimos or certain American Indians.

EAR INDEX

Differences in absolute size of ear are masked in the index. According to Table 59 there is little sex difference noticeable, as is true in most races, and indeed very little group difference. In general it may be said that the Eskimos and Indians are alike in having relatively somewhat long ears.

TABLE 59.—EAR INDEX

Observer	No.	Range	Mean ±p.e.	S.D. ±p.e.	C.V. ±p.e.	×p.e.
			Eskimo: Male			
Labrador						
Strong	58	38.6–65.2	52.97±0.45	5.09±0.32	9.61±0.60	....
Pittard	8	52.8–63.3	(57.1)	....	....	....
Duckworth	11?	?	53.0	....	....	....
Western Alaska						
Moore*	63	46.9–62.9	54.61±0.29	3.40±0.20	6.23±0.37	**3.04**
Collins and Stewart*	39	47.7–62.9	54.91±0.43	3.97±0.30	7.22±0.55	**3.13**
Hrdlička (1933)	173	45.2–59.7	52.9	....	....	....
			Eskimo: Female			
Labrador						
Strong	79	41.1–70.6	53.36±0.36	4.75±0.25	8.90±0.48	....
Pittard	6	50.7–65.0	(56.3)	....	....	....
Duckworth	10?	?	(47.4)	....	....	....
Western Alaska						
Moore	48	43.4–62.9	53.12±0.39	4.01±0.28	7.55±0.52	0.45
Collins and Stewart	27	44.3–60.7	53.04±0.52	3.99±0.37	7.53±0.69	0.51
			Indian: Male			
Labrador						
Strong	11	49.2–61.3	53.8	....	....	....
Cree						
Grant	25	46 –61	53.40±0.52	3.83±0.36	7.17±0.68	....
Chipewyan						
Grant	44	43 –64	55.00±0.47	4.65±0.33	8.47±0.61	....
Chippewa						
Hrdlička (1916)	17	47.2–60.9	53.8	....	....	....
Sioux						
Hrdlička (1931)	72	42.2–64.2	53.6	....	....	....
			Indian: Female			
Labrador						
Strong	3	49.2–55.2	(52.5)	....	....	....
Chippewa						
Hrdlička	42	48.1–65.2	55.4	....	....	....
Sioux						
Hrdlička	36	46.7–61.5	53.3	....	....	....

* See Hrdlička (1930).

SKIN COLOR

The skin of the inner side of the upper arm was judged as to color tone by comparison with von Luschan's scale. There are no comparative records for Labrador Eskimos, but Hallowell made the same test on his Indians and Shapiro reports Weyer's observations on Alaskan Eskimos (Seward Peninsula). In combining these cbservations (Table 60) I have followed Coon's (1931) recommendations:

> Numbers 1 and 2 [of von Luschan's scale] are seldom encountered, and numbers 4 to 6, shades of yellowish unvascular brown, interrupt the more or less logical sequence, 3, 7, 8, 9, 10, 11, 12, 13, etc. I have divided this range

TABLE 60.—SKIN COLOR: VON LUSCHAN SCALE
(*Inner side of upper arm*)

Color number	Labrador Eskimo (Strong) No.	Per cent	Alaskan Eskimo (Shapiro) No.	Per cent	Labrador Indians (Strong) No.	Per cent	Labrador Indians (Hallowell) No.	Per cent
			Male					
3	1	*30.8*	..	....	..	....	..	*11.3*
7	..		..		..		3	
8	2		..		..		..	
9	13		..		..		3	
10	14	*63.5*	9	*70.0*	2	*50.0*	13	*62.3*
11	10		12		..		5	
12	8		5		..		14	
13	1		2		3		1	
14	2	*5.7*	2	*30.0*	1	*50.0*	1	*26.4*
15	1		8		3		11	
16	..		1		..		..	
17	..		1		1		2	
Total	52		40		10		53	
			Female					
3	..	*2.6*	..	....	..	....	1	*2.8*
7	..		..		..		..	
8	1		..		..		..	
9	1		..		..		..	
10	37	*92.3*	..	....	1	*57.1*	6	*68.6*
11	14		..		..		5	
12	15		..		2		12	
13	6		..		1		1	
14	3	*5.1*	..	....	..	*42.9*	3	*28.6*
15	1		..		1		4	
16	..		..		1		2	
17	..		..		1		1	
Total	78				7		35	

> as follows: light, 3, 7, 8, 9; medium, 10, 11, 12, 13; dark, 14 and all thereafter. The divisions are of course purely arbitrary but were made because they seem best to coincide with my own observations made in 1928 (p. 254).
>
> The classification "light," numbers 3, 7, 8, and 9, are colors such as one would normally find in Europeans with a considerable increment of Nordic or North European blood; a skin almost without pigment, and made pink by

> the presence of capillaries close to the surface of the skin. Under "medium" comes the color range usually found among South European Whites of brunet stock, with black hair and dark eyes; a skin more deeply pigmented than and not as highly vascular as the former. Under "dark" are included those hues which are found, in the south of Europe, among persons in whom the possession of a slight increment of Negro blood is visible, and all shades of brown deeper than this. . . .
>
> Although this method of lumping together the skin color observations into three categories may be somewhat crude, it has the advantage of greater reliability than the confusing and specious accuracy of a strict compilation, number by number, of von Luschan's categories (p. 256).

Allowing for individual variations in the color sensitivity of the observers, it is remarkable that the results shown in Table 60 are so uniform. With the exception of Strong's insufficient sample of Indians, the majority in each series falls in the group of colors numbered 10–12 (medium). On the basis of Ridgway's color standards (1912), these tones of most frequent occurrence may be described as ranging approximately from light pinkish cinnamon to light vinaceous cinnamon. The lightest tone encountered (no. 3) may be described, on the basis of the same standards, as shell pink; the darkest tone (no. 17) as wood brown. That there is a tendency to slightly darker skin in the Indians than in the Eskimos is suggested by the fact that both Strong and Hallowell agree in recording higher percentages of the dark group of colors for the Indians.

MISSING TEETH

Strong was not equipped to make a full dental examination. However, he looked for caries as best he could and when they were present he estimated the amount of destruction in one of four degrees. In addition, he recorded the number of missing teeth. Since dental destruction is of very little value for comparative purposes unless detailed, I have considered only the record of missing teeth. Table 61 shows the frequency of missing teeth according to age and sex. It is quite apparent, of course, that more teeth are missing in old age and in the females.

If we count the number of missing teeth for each sex and compute the frequency in relation to the usual complement of teeth (32 per person), we find that in males 15.2 per cent and in females 25.6 per cent were missing. This compares with about 12 per cent for the skulls of the old stone grave series (Table 19). Although there is thus a considerable difference between the modern and prehistoric peoples in this respect, these figures do not tell the whole story. We have seen in Table 18 that dental attrition was markedly greater

in the prehistoric group than in the early historic. This factor is undoubtedly responsible for the tooth loss of those early times, for the Labrador Eskimo then had caries very infrequently, just as did other Eskimo groups before contact with civilization (see Goldstein; Pedersen). Today the teeth of the Labrador Eskimo living on white man's food do not get heavy wear but are lost through decay. Unfortunately, our data are not full enough to show that the amount of dental decay varies with locality and therefore with the amount of white man's food consumed, a fact established by Collins (1932) for the Western Eskimo and by Pedersen for the Greenland Eskimo.

TABLE 61.—FREQUENCY OF MISSING TEETH IN LIVING LABRADOR ESKIMO

	Number of Teeth Missing									
Age	0	1–4	5–8	9–12	13–16	17–20	21–24	25–28	29–32	Total
					Male					
18–30	3	11	2	..	..	..	..	..	..	16
31–40	3	6	2	1	..	..	..	..	..	12
41–50	..	4	1	1	1	..	..	..	..	7
51–60	1	2	2	3	..	..	..	..	..	8
61–old	..	4	..	3	1	1	..	..	1	10
Total	7	27	7	8	2	1	..	..	1	53
					Female					
17–30	4	12	1	..	..	1	..	..	..	18
31–40	4	3	3	..	1	1	1	..	..	13
41–50	1	4	1	3	..	1	1	..	..	11
51–60	1	4	1	..	2	2	1	..	1	12
61–old	1	..	5	4	2	2	1	1	1	17
Total	11	23	11	7	5	7	4	1	2	71

It is important to note that the record for the Indians is very different from that of the modern Eskimos. Although there are records for only thirteen Indians, none of them had any teeth missing. Presumably this situation is to be accounted for by the fact that these northern Indians have very limited contact with civilization.

PALATAL RAPHE

In life there is a line or ridge marking the midline of the hard palate, known as the "raphe." This structure overlays the suture connecting the two maxillary bones anteriorly and the two palate bones posteriorly. Since hyperostosis of the borders of this suture, the so-called "palatal torus," is fairly common in Eskimos, Strong palpated with his finger the hard palate of each of his subjects in order to determine the degree of development of this structure. When the raphe was palpable it was recorded as

slight (trace, faint), medium (+), or marked. In a few cases the expressions "present" and "not marked" were used and these have been interpreted as "medium."

The records comprise 52 males and 76 females. Of these a raphe could not be detected in 23 males and 23 females; in other words it was present in 55.8 per cent of the males and 69.7 per cent of the females. Two males and six females were noted as having this structure markedly developed. Only in these eight individuals (6.2 per cent) could there have been much of a bony torus present. It will be recalled (p. 52) that of 59 Labrador skulls examined by the writer only one showed a torus of more than slight development. The difficulty as regards interpretation has been mentioned in connection with the torus.

As regards the Indians it may be noted that of the thirteen individuals for which a record was made, five, all males, had the raphe present. In two of these cases the raphe was stated to be of marked development.

DISCUSSION

Of first importance in this study of Strong's observations on the living is the evaluation of the reliability of the measurements. Having reviewed the evidence for personal error and studied the measurements in comparison with the best available data, the conclusions may be summarized briefly as follows:

Stature	Good
Sitting height	Slightly low
Head length	Slightly low
Head breadth	Slightly low
Head height	Agrees with comparative data for Western Eskimos
Minimum frontal diameter	Best data available
Bizygomatic diameter	Slightly low
Bigonial diameter	Best data available
Menton-crinion	Direct measurement good
Menton-nasion	Direct measurement high
Forehead height	High
Nose height	Possibly high, but close to general mean of Eskimos
Nose breadth	Good
Ear length	Best data available
Ear breadth	Good

The least reliable measurements are those involving nasion; namely, menton-nasion, forehead height, and nose height. In these three cases the means are higher than would be expected. In four other cases errors in technique are probably responsible for failure to obtain the maximum measurement: sitting height, head length, head

breadth, and face breadth. Here, naturally, the means are lower than would be expected. All the remaining eight measurements are fairly reliable and for the most part represent the best data available for the region.

In the course of this analysis mention has been made of the fact that an unrefined technique may lead to increased ranges of the measurements and still give reliable means. I would attribute to this factor, rather than to White admixture, any unusual variability shown by Strong's data. Under these circumstances it is desirable to summarize the variability of this Labrador series in relation to other Eskimo groups.

Howells (1936) has pointed out that

> The Coefficient of Variation has a proper application in comparing the variabilities of different anthropometric criteria, as such, with one another, but it should not be used in comparing the mean variabilities of different human groups: the reason for this is that while it measures the variability of the sample, it is at the same time measuring the inherent variability of the character to which it applies, and the latter is a considerable differential which should be removed (p. 594).

Howells has gone to considerable trouble to calculate the mean standard deviations (mean sigmas) of all the available series of 50 or more cases. On the basis of these figures he proposes to substitute for the Coefficient of Variation a "sigma ratio":

> This is arrived at by dividing any individual sigma by the mean sigma for that character, giving a ratio, or percentage of the mean sigma. Ideally, and on the average, this figure will approximate 100 (when expressed as a percentage) which may thus be taken as a norm. Therefore, for any given sample the mean sigma ratio for all available measurements and indices will constitute an index of the variability of that group relative to the general average which is represented by 100 (p. 594).

Using this device I have calculated the mean sigma ratios of Strong's male Labrador Eskimo series and of such other Eskimo series for which sigmas are available and where the number exceeds 50. These figures are shown in Table 62 and seem to indicate that the Labrador series is of little more than average in variability (nose height excluded). Furthermore, as far as the data go, the Labrador series seems to be less variable than either the Barrow or Nunatagmiut series of Seltzer.

Another thing brought out by this study is the fact that we should be very careful about generalizing from the measurements on the living Eskimos of Labrador, because they have undergone certain changes in physical type during the historic period. There is good reason to believe that stature has decreased slightly here.

The skull, too, has probably become more rounded, although it is not certain that this is detectable in the living, owing perhaps to the decreased thickness of the temporal muscles (p. 92). A narrowing and lengthening of the face is also suggested.

TABLE 62.—SIGMA RATIOS OF MALE ESKIMO SERIES WITH MORE THAN FIFTY INDIVIDUALS

	LABRADOR	CORONATION GULF		BARROW	NUNATAGMIUT
Measurements	Strong (58)	Jenness (82)	Seltzer (65)	Seltzer (62)	Seltzer (64)
Stature	96.4	94.7	.....	.....	.....
Head length	100.6	94.7	89.6	102.6	76.7
Head breadth	97.1	78.2	82.4	109.0	87.2
Min. front. diam.	81.1	.....	.....	.....	.....
Bizyg. diam.	109.5	102.3	87.9	122.2	138.8
Bigon. diam.	110.0	100.2	.....	.....	.....
Face height	.....	99.5	102.0	121.2	116.5
Upper face height	.....	81.5	.....	.....	.....
Nose height	.....*	108.8	.....	.....	.....
Nose breadth	104.1	99.3	.....	.....	.....
Cephalic index	94.7	76.4	72.0	95.0	86.7
Ceph.-fac. index	122.2	91.2	78.6	92.6	134.8
Facial index	.....	60.9	88.0	96.1	78.4
Nasal index	94.9	83.1	.....	.....	.....
	(10)	(13)	(7)	(7)	(7)
Mean sigma ratio	101.1	90.1	85.8	105.5	102.7

* Excluded because standard deviation exceeds the "mean sigma" plus three times its standard deviation.

That these changes have not produced a type differing very considerably from that of the main comparative series from the eastern Arctic appears from Table 63. As Seltzer has clearly shown, these Eskimo groups are characterized by low stature, as compared with those of the western Arctic. Considering the possibilities of personal error and other factors affecting these figures, as brought out in the present study, there seems to be no justification for evaluating the

TABLE 63.—COMPARATIVE MEASUREMENTS ON LIVING ESKIMOS (MALES) OF THE EASTERN ARCTIC

	LABRADOR		EASTERN GREENLAND	NORTHWESTERN GREENLAND	HUDSON BAY
Measurements	Strong (58)	Others (37)	Poulsen (29)	Hrdlička-Steensby (11)	Birket-Smith (99)
Stature	158.4	157.0	161.1	157.4	160.6
Head length	192.2	192.9	192.0	195.8	193.7
Head breadth	148.3	151.5	147.0	152.2	149.7
Cephalic index	*77.3*	*78.6*	*76.5*	*77.7*	*77.3*
Bizyg. diam.	141.7	144.9	141.7	147.0	143.4
Ceph.-fac. index	*95.7*	*95.8*	*98.4*	*96.5*	*95.8*
Bigon. diam.	114.3	.....	113.9	.....	.....
Gon.-zyg. index	*80.6*	.....	*80.4*	.....	.....
Nose height	57.0	52.0	49.5	.....	.....
Nose breadth	38.0	38.3	34.1	.....	.....
Nasal index	*67.0*	*73.8*	*69.2*	.....	.....

differences too closely. I would point out, however, that the low stature and other differences reported for northwestern Greenland (Smith Sound) by Hrdlička and Steensby cannot be accounted for on the basis of contact with civilization as in Labrador; indeed, the reverse is true, and it is necessary to look upon this group as having had a different origin or as the product of inbreeding in isolation, unless of course the sample is not representative.

In addition to considering the Labrador Eskimos in relation to the other Eastern Eskimos, it is desirable to review the evidence upon which Seltzer has based his contention that

> The "Algonkian Cree" stock sent their numbers to the north and east in successive waves of migration. The first group occupied the whole territory of Hudson Bay, Labrador, Baffin Land and Greenland, supplanting still existing bands of Old Thulers. The second group, represented by the present Caribou Eskimo, at a later period invaded the Barren Grounds where they are to be found today (1933, p. 368).

The relationship of the Eskimo groups mentioned in this quotation has been pointed out (Table 63), and is based considerably upon low stature. In establishing the connection with the Cree, Seltzer used Grant's figures for the group living at Chipewyan, a reserve located at the western end of Lake Athabaska, Alberta. Here again the relationship was based largely upon low stature, for Grant's Cree gave a figure of 161 cm. (male). I have called attention, however, to the fact that Boas (1895) reported a stature of 168.5 cm. for 57 males. Moreover, Grant himself has reported a stature of 172.5 cm. for 55 male Cree measured at Oxford House, northeastern Manitoba. It is true that Grant attributes the high stature of the Oxford House Cree to White admixture, but it seems doubtful whether this factor would account for the total difference of 11.5 cm. In view of the fact that the stature of northern male Indians generally is around 166–168 cm., I would suspect the stature of the Chipewyan Cree of being atypical.

In view of this situation, and the new data available in this study, we may restate in Table 64 the metrical comparison between the Cree and Labrador Eskimo, using Shapiro's statistical device,[1] and giving Boas' figures for stature and cephalic index as alternates. It will be seen from this table that by the use of different figures, and with six additional measurements, it is possible to get average differences exceeding 2.6. In interpreting the size of this difference

[1] This consists merely of calculating for each measurement and index the absolute differences between the various groups, and the averages of these absolute differences, disregarding signs, for the various groups. The quality of the sample is disregarded.

TABLE 64.—COMPARISON BETWEEN MEANS OF CREE INDIANS AND LABRADOR ESKIMO MALES

Measurements	Cree: Grant	Cree: Boas	Labrador: Strong	Dif.	Labrador: Others	Dif.
Stature	161.0	168.5	158.4	2.6(10.1)	157.0	4.0(11.5)
Head length	193.2	.....	192.2	1.0	192.9	0.3
Head breadth	150.0	.....	148.3	1.7	151.5	1.5
Cephalic index	*77.6*	*79.8*	*77.3*	0.3(2.5)	*78.6*	1.0(1.2)
Face height	124.6	.....	.....	...	121.3	3.3
Face breadth	144.6	.....	141.7	2.9	144.9	0.3
Facial index	*86.1*	.....	.....	...	83.7*	2.4
Ceph.-fac. index	*96.6*	.....	*95.7*	0.9	*95.8*	0.8
Average differences				1.57(3.18)		1.70(2.66)
Nose height	54.7	.....	57.0	2.3	52.0	2.7
Nose breadth	38.2	.....	38.0	0.2	38.3	0.1
Nasal index	*69.2*	.....	*67.0*	2.2	*73.8*	4.6
Ear length	65.6	.....	70.9	5.3	....	...
Ear breadth	35.2	.....	37.4	2.2	....	...
Ear index	*53.4*	.....	*53.0*	0.4	....	...
Average differences				1.83(2.64)		1.91(2.61)

*Calculated from the means.

I shall do no more than quote Seltzer's remarks regarding the difference of 2.29 which he found in comparing the Smith Sound Eskimo and the Chipewyan Indians by the same method:

> This is not a small average difference, but still not excessively large. The difficulty arises in reconciling the exceedingly small stature of the Smith Sound Eskimos (157.4 cm.) with the much taller Chipewyans who have a mean of 166.4 cm. This great stature difference of 9 cm., in my opinion, is sufficient grounds for calling in question the Chipewyan origin of the Smith Sound Eskimo (p. 361).

I may add that, just as the modern Labrador Eskimo are not entirely typical of the prehistoric Labrador Eskimo, so the Cree at Chipewyan may not be like the prehistoric Cree. According to Grant, the Post at Chipewyan was established in 1789, and it seems likely, therefore, that these Cree have been influenced by civilization as long as have the Labrador Eskimo. Until more data are at hand I see no reason for accepting the band of Cree at Chipewyan as unchanged representatives of the Cree as a whole or of that portion of the Cree that may have given rise to the "Eschato-Eskimo."

Finally, without claiming more than an elementary knowledge of statistics, I venture to suggest that the statistical device employed by Shapiro and Seltzer has all the defects, and more, of the coefficient of racial likeness which Seltzer has condemned (1937).

VI. GENERAL DISCUSSION

One of the objects of this study has been to present a critical analysis of the measurements under consideration. I have felt that the anthropometry of the Arctic region will advance more rapidly if we recognize the deficiencies of the data, rather than minimize them —a general impulse, not to say tendency, where one is working up the material of a colleague. To this end I have tried to be critical likewise of the comparative data.

In connection with the latter I would like to emphasize again the fact that the great majority of our skeletal collections from the far north are restricted to skulls without associated cultural objects. The chances of correct sex identification decrease considerably in the absence of the skeleton and the mean measurements of the two sexes vary accordingly (see p. 28). By ignoring cultural associations we miss one of the few indications of time. If we complicate this situation still further upon measuring the material by introducing new definitions of landmarks, etc., there is little wonder that metrical differences appear in the results.

Passing on to the living of the far north, we encounter even greater difficulties. For one thing, the majority of measurements, usually on small groups, have been taken by those with limited anthropometric experience, much as in Strong's case. To this must be added the unfavorable working conditions encountered in these regions, and their attendant influence upon technique; the uncertainty of detecting mixed-bloods; the change in physical type following acculturation, etc.

Although these difficulties are quite well known to most workers in this field, there is a general tendency, especially noticeable here, and encouraged by modern biometric procedures, to be uncritical of measurements. Once having accepted the figures it is an easy step, of course, to generalize from the metrical similarities. Started upon this course, too, the time element means nothing. In brief, one has to discount the attempts of the physical anthropologist toward the solution of the Eskimo problem because of the unsatisfactory nature of his present material. Morant's recent (1937) analysis of Eskimo skull measurements by means of the coefficient of racial likeness is a case in point.

In dealing with Labrador I have found it necessary to review the evidence upon which Seltzer claims close relationship between

the Eskimos of this region and the Cree Indians of central Canada. I have set forth arguments against the procedures by which this relationship has been established in the discussion concluding the last chapter. I object chiefly to drawing such far-reaching conclusions from such unequal material, as described above; in other words, to concluding from the similarity of a few measurements taken on small samples of widely separated modern groups, speaking different languages (Eskimo, Algonkian Cree) and undergoing different stages of acculturation (Whites), that they must have had a common ancestry a little over 1,000 years ago (according to Jenness' theory; see p. 21).

I have not attempted to analyze the material upon which Shapiro (1931) has based a similar connection between the Chipewyans of Athapascan Indian stock and the Western Eskimo. However, the same general opposing arguments would apply. I may add that Shapiro (1934) has also studied skull measurements by the same method and, being thus able to ignore stature and other features, has found a close similarity between the Western Eskimo and the Algonkins and Iroquois of the United States and Canada. This similarity has not been confirmed by von Bonin and Morant's (1938) analysis of the same data by means of the coefficient of racial likeness:

> . . . .comparison of the six calvarial measurements suggested that seventy-eight of the 112 comparisons between the American Indian and Eskimo series would give reduced coefficients of racial likeness greater than 19.[1] It was found that thirty-one of the remaining thirty-four comparisons also give values above the same limit, leaving the following three reduced coefficients: Western Eskimo (220.0) and Arikara (49.1)—7.07 ± 0.31 (15); Western Eskimo (220.0) and Western Algonkin (44.1)—15.91 ± 0.33 (15); Point Hope Eskimo (125.1) and East-Central Algonkin (58.5)—17.32 ± 0.31 (15) (pp. 117–118).

In thus criticizing Shapiro's and Seltzer's methods I do not wish to minimize the contribution they have made in calling attention to the unusual similarity between the sets of measurements of these widely scattered groups. Part of the strength of their argument does not appear on the surface; namely, that it is almost impossible to find like agreement between the Eskimos and other Indian groups. Of course this is less surprising in view of the fact that the Algonkins and Athapascans are neighbors of the Eskimos. However, granted that further material will maintain a certain

[1] These authors classify the C.R.L. into three groups: less than 5, 5–10, and 10–19, which presumably indicate close resemblance, moderate resemblance, and slight resemblance, respectively.

similarity, there remains the problem of interpretation. Are the differences small enough to have been developed from a common parentage in the central regions of Canada during the short interval allotted? Or can they be accounted for by the intermixture of neighboring groups? Or do they indicate a convergent evolution of more remotely related groups? The answer to these questions cannot yet be stated categorically and is better left to future investigation than to speculation.

Throughout this study I have emphasized the differences between the living Labrador Eskimos and their early historic and protohistoric ancestors. These differences would probably be more obvious if we had skeletal measurements on the modern population for comparison with the ancient. As it is, we find, for example, that there is an indicial difference in head shape between these two groups, of more than five units, on the average. I have tried to explain this indicial difference by the extreme development of the temporal muscles in the living (p. 92), but find it impossible to reconcile all the facts. For instance, all reliable measurements on the skull, regardless of race, show a higher cranial index for the females than the males. This relationship is preserved in most living Indian groups (cf. Grant's Chipewyans), but is reversed in the Eskimos (see p. 91);[1] in other words, the Eskimo woman, starting with a relatively rounder skull than the man, has a relatively longer head in life, in spite of using her masticatory apparatus more than he does in chewing hides. Although it is hard to see how this result comes about, we are asked to believe that by taking on an Eskimo culture a group of northern Indians achieved a relative lengthening of the women's heads as compared to the men's.

Returning to the indicial differences in head shape mentioned above, we must not lose sight of the fact that the old Labrador Eskimos were very dolichocranic. Moreover, it seems well established by Strong's early nineteenth century (recent grave) series that the Labrador Eskimo skull was rounder 75 years ago at the mission stations than in the prehistoric period. I have attributed this change in head shape, together with a possible decrease in stature, to altered diet. I do not believe that it can be satisfactorily explained otherwise. There is a growing body of evidence from

[1] Jenness (1923) has noted this reversal in the Eskimos, for he says: "In regard to sexual differences the cephalic indices of the women seem to be everywhere slightly lower than those of the men, the difference varying from about 1 to 2.5. Such skull measurements as are available give a directly opposite result." (p. B57.)

other racial groups showing that both head shape and stature are rather easily changed when the environment, and especially nutrition, is altered.[1]

The substance of this argument, then, is that measurements on living Eskimos that have been in contact with civilization for upwards to 100 years are of minor value in tracing Eskimo relationships. Not only is this true because of the physical changes attributable to acculturation, but also, of course, because measurements on the living cover such a brief period of time and are not strictly comparable with those on the skeleton.

The data on the prehistoric Labrador Eskimo skeletons here presented establish more firmly the fact that the physical type represented is much the same as that predominant in Greenland; it differs materially from that of the "western longheads" (Old Igloos).[2] Also, this type contrasts rather clearly with the Thule, at least with that of the late survivors. Assuming that Labrador was originally populated by Thule people of a physical type seen in late survivors elsewhere, it is safe to say that the type did not survive here. Whether or not the Labrador and Greenland physical type was derived from a mixture of Thule and Dorset peoples, or is a representative of the latter alone, cannot be stated until the Dorset physical type is identified. That some such explanation may be forthcoming, however, is suggested by recent investigations which have shown a wider distribution of Dorset culture elements in the eastern Arctic than was heretofore known (personal communication from Mr. Collins).

Although in general, and on a metrical basis, the Eskimos of Labrador and Greenland have a similar physical type, we must

[1] Krogman (1938) has summarized this literature (pp. 233–236). He says in part: "Finally, we must give attention to a factor, or a set of factors, that is as difficult to evaluate as it is to describe: the environment, whatever connotations this term may have. Both Ripley and Buxton agree that local shortness of stature among a people generally tall may be due to so-called 'misery spots.' The combined effects of disease and undernourishment may result in a stunting of the presumably 'racial' growth pattern." (p. 235.)

"In a very definite sense food and health are part of the environment. There are several suggestive studies to demonstrate the effect of these two factors. Neubauer fed rats an inadequate diet and found that avitaminosis, prenatal or postnatal, resulted in a definite tendency to brachycephaly. Bakwin and Bakwin found in children who had suffered from intestinal intoxication during the first year of life a marked diminution in the transverse diameters of face and thorax. . . ." (p. 236.)

[2] Morant (1937) found a C.R.L. of 6.10 ± 0.49 between the Old Igloos and Greenland. This presumably denotes moderate resemblance.

not forget that the skeletal dimensions of these two groups in some instances differ significantly; indeed, the Labrador skeleton on the average is uniformly smaller than that from Greenland. This fact, whatever it may mean, needs to be taken into consideration in establishing the relationships of these groups.

VII. CONCLUSIONS

Briefly stated, the following are the main points developed in the course of the present study:

Skeleton

(1) Errors in sexing contribute considerably to the metrical differences between series of Eskimo skulls.

(2) Personal error in measuring Eskimo skulls is due largely to differing interpretations of landmarks.

(3) Comparisons between skeletal series of prehistoric Labrador, Greenland, Thule, and Old Igloo Eskimos show the closest metrical resemblance to be between those of Labrador and Greenland.

(4) The old Labrador Eskimo skeletons differ from all others in the eastern Arctic in being uniformly smaller, on the average.

(5) Pearson's formulae for stature reconstruction fail to predict Eskimo stature from the long bones by at least 3 cm.

(6) The application of this correction factor to the data on reconstructed Eskimo stature clarifies the distribution of stature among the Eastern Eskimo in prehistoric times: the Thule people were taller (164–166 cm.) than the Labrador-Greenland people (160–162).

(7) Comparison of the recent grave series (mid-nineteenth century) of Labrador Eskimos with those from prehistoric times shows that the former have shorter and smaller heads with longer and narrower faces, relatively higher orbits, relatively narrower alveolar arches, and slightly lower stature.

Living

(8) Of Strong's measurements on the living the three involving the landmark nasion (menton-nasion, forehead height, and nose height) are the least reliable; errors in technique somewhat affect the reliability of four other measurements (sitting height, head length, head breadth, and face breadth). The remaining eight measurements are judged to be fairly reliable.

(9) The physical differences between the modern and ancient Eskimos of Labrador, as witnessed chiefly by the change in head shape and the decrease in stature, are due for the most part to altered diet.

(10) As far as can be judged from Strong's inadequate Indian sample, the northern bands of the Montagnais-Naskapi differ from those to the south, as described by Hallowell, and are, if anything, less distinct from the Eskimos.

(11) Taking into consideration the defects of the data on the living Eastern Eskimos and northern Indians, there is little justification for drawing far-reaching conclusions from the metrical similarities or differences shown by these data.

APPENDIX A1

Measurements of Individual Skulls

Cat. No.	Age†	Ant.-post. max. diam.	Lat. max. diam.	Bas.-breg. ht.	Cr. index	Lt.-ht. index	Br.-ht. index	Mean ht. index	Cranial module
Field Museum					*Recent grave series: male*				
192005	Y	186	136*	134	73.1	72.0	98.5	83.2	152.0
192006	69	181	134	134	74.0	74.0	100.0	85.1	149.7
192007	O	192	139	142	72.4	74.0	102.2	85.8	157.7
192008	73	186	134	138	72.0	74.2	103.0	86.2	152.7
192009	43	177	139	135	78.5	76.3	97.1	85.4	150.3
192010	37	184	134	130	72.8	70.6	97.0	81.8	149.3
192011	50	196*	128*	132	65.3	67.3	103.1	81.5	152.0
192012	44	190	134	...	70.5	....	.....	....	.....
192013	21	180	139	130	77.2	72.2	93.5	81.5	149.7
192015	42	192	(130)	...	(67.7)	....	.....	....	.....
192016	M	179	130*	131	72.6	73.2	100.8	84.8	146.7
192017	Y	185	131	135*	70.8	73.0	103.0	85.4	150.3
					Recent grave series: female				
192018	M	169	131	125	77.5	74.0	95.4	83.3	141.7
192019	66	...	...	...	....	....	.....	....	.....
192020	47	188	134	...	71.3	....	.....	....	.....
192022	50	174	132	...	75.9	....	.....	....	.....
192023	37	179	125	134*	69.8	74.9	107.2	88.2	146.0
192024	O?	187	(126)	...	(67.3)	....	.....	....	.....
192025	52	174	134	126	77.0	72.4	94.0	81.8	144.7
192026	45	179	128	...	71.5	....	.....	....	.....
					Old stone grave series: male				
192001	O	189	136	134	72.0	70.9	98.5	82.5	153.0
192028	M	185	136	132	73.5	71.4	97.0	82.2	151.0
192033	Y	178	(132)	129	(74.2)	72.5	(97.7)	(83.2)	(146.3)
192036	M	194	140	140	72.2	72.2	100.0	83.8	158.0
192038	M	190	(140)	142	(73.7)	74.7	(101.4)	(86.1)	(157.3)
Peabody Museum									
2708‡	Y	185	138	137	74.6	74.0	99.3	84.8	153.3
47871	Y	188	131	134	69.7	71.3	102.3	84.0	151.0
47990	M	189	128	141	67.7	74.6	110.2	89.0	152.7
47992	M	181	141	138	77.9	76.2	97.9	85.7	153.3
47993	Y	189	130	134	68.8	70.9	103.1	84.0	151.0
57326	M	186	132	133	71.0	71.5	100.8	83.6	150.3
57328	M	192	133	142	69.3	74.0	106.8	87.4	155.7
57331	M	193	140	130	72.5	67.4	92.8	78.1	154.3
57333	Y	187	144	138	77.0	73.8	95.8	83.4	156.3
57335	O	194	(132)	136	(68.0)	70.1	(103.0)	(83.4)	(154.0)
57336	O	174	131	130	75.3	74.7	99.2	85.2	145.0
57337	O	192	138	130	71.9	67.7	94.2	78.8	153.3
57339	M	200	129	138	64.5	69.0	107.0	83.9	155.7
57358	M	189	...	134	....	70.9	.....	....	.....
58795	Y	184	132	136	71.7	73.9	103.0	86.1	150.7
59657	O	190	135	138	71.0	72.6	102.2	84.9	154.3

* Measurement approximate; estimated measurements are shown in parentheses and have not been included in the calculations.

† Except where age is known, three age groups have been distinguished: Y, young adult (up to 35); M, middle-aged (35–50); O, old (50–).

‡ A few measurements on this skull were reported by Wyman (1868).

MEASUREMENTS OF INDIVIDUAL SKULLS—*Continued*

Cat. No.	Age†	Ant.-post. max. diam.	Lat. max. diam.	Bas.-breg. ht.	Cr. index	Lt.-ht. index	Br.-ht. index	Mean ht. index	Cranial module
University of Göttingen (Spengel, 1874)									
371	Adult	195	135	...	*69.2*	....	.....	....	.....
372	Adult	190	132	...	*69.5*	....	.....	....	.....
373	Adult	180	128	...	*71.1*	....	.....	....	.....
Collection? (Virchow, 1880)									
......	Adult	201	139	...	*69.2*	....	.....	....	.....
Lausanne Museum (Schenk, 1899)									
1	M	192	134	134	*69.8*	*69.8*	*100.0*	*82.2*	153.3
2	O	190	138	134	*72.6*	*70.5*	*97.1*	*81.7*	154.0
Paris Museum of "Comparative Anatomy" (Sergi, 1901)§									
10241	Y	182	136	...	*74.8*	....	.....	....	.....
10244	M	196	144	...	*73.5*	....	.....	....	.....
University of Cambridge (Duckworth, 1895)									
1868	Adult	183	138	145	[illegible]	*79.2*	*105.1*	*90.3*	155.3
1869	Adult	202	133	140	*65.8*	*69.3*	*105.3*	*83.6*	158.3
1870	Adult	171*	128*	...	*74.7*	....	.....	....	.....
1871	Adult	181*	130	139	*71.8*	*76.8*	*106.9*	*89.4*	150.0
Dresden Museum (Oetteking, 1908)¶									
1440	Adult	185	138	138	*74.6*	*74.6*	*100.0*	*85.4*	153.7
3918	Adult	183	132	139	*72.1*	*75.9*	*105.3*	*88.2*	151.3
3922	Adult	188	137	134	*72.9*	*71.3*	*97.8*	*82.5*	153.0
3923	Adult	185	131	139	*70.8*	*75.1*	*106.1*	*88.0*	151.7
3925	Adult	178	130	128	*73.0*	*71.9*	*98.5*	*83.1*	145.3
Field Museum			*Old stone grave series: female*						
192027	M	178	(130)	134	(*73.0*)	*75.3*	(*103.1*)	(*87.0*)	(147.3)
192029	Y	180	134	125	*74.4*	*69.4*	*93.3*	*79.6*	146.3
192030	M	...	130*	134	....	....	*103.1*	....	.....
192031	O	190	126	130	*66.3*	*68.4*	*103.2*	*82.3*	148.7
192032	O	188	(132)	132	(*70.2*)	*70.2*	(*100.0*)	(*82.5*)	(150.7)
192034	Y	183	132	...	*72.1*	....	.....	....	.....
192037	M	181	...	...	....	....	.....	....	.....
Peabody Museum									
47873	M	179	130	133	*72.6*	*74.3*	*102.3*	*86.1*	147.3
47874	Y	173	130	121	*75.1*	*69.9*	*93.1*	*79.9*	141.3
47875	M	176	122	126	*69.3*	*71.6*	*103.3*	*84.6*	141.3
47989	O	180	...	126	....	*70.0*	.....	....	.....
47994	M	188	126	122	*67.0*	*64.9*	*96.8*	*77.7*	145.3
47995	Y	175	126	122	*72.0*	*69.7*	*96.8*	*81.1*	141.0
47996	M	182	134	128	*73.6*	*70.3*	*95.5*	*81.0*	148.0
47997	O	179	(128)	124	(*71.5*)	*69.3*	(*96.9*)	(*80.8*)	(143.7)
47999	O	178	128	122	*71.9*	*68.5*	*95.3*	*79.7*	142.7
57327	Y	180*	130	128	*72.2*	*71.1*	*98.5*	*82.6*	146.0
57329	Y	174	131	122	*75.3*	*70.1*	*93.1*	*80.0*	142.3
57332	Y	184	132	127	*71.7*	*69.0*	*96.2*	*80.4*	147.7
57338	M	181	131	134	*72.4*	*74.0*	*102.3*	*85.9*	148.7

* Measurement approximate; estimated measurements are shown in parentheses and have not been included in the calculations.

† Except where age is known, three age groups have been distinguished: Y, young adult (up to 35); M, middle-aged (35–50); O, old (50–).

§ Sex of 10241 unknown; 10244 stated to be female.

¶ Sex identification made in Germany at request of Dr. Oetteking (1937).

MEASUREMENTS OF INDIVIDUAL SKULLS—*Continued*

Cat. No.	Age †	Ant.-post. max. diam.	Lat. max. diam.	Bas.-breg. ht.	Cr. index	Lt.-ht. index	Br.-ht. index	Mean ht. index	Cranial module
Peabody Museum—*Continued*									
57341	Y	174	116	128	*66.7*	*73.6*	*110.3*	*88.3*	139.3
57343	Y	178	132	134	*74.2*	*75.3*	*101.5*	*86.4*	148.0
57344	Y	172	130	132	*75.6*	*76.7*	*101.5*	*87.4*	144.7
57345	O	180	124	130	*68.9*	*72.2*	*104.8*	*85.5*	144.7
57346	O	184	130	138	*70.6*	*75.0*	*106.2*	*87.9*	150.7
57351A	O	190	...	132	....	*69.5*	.....	....	.....
57475	Y	181	126	128	*69.6*	*70.7*	*101.6*	*83.4*	145.0
57476	Y	179	130	126	*72.6*	*70.4*	*96.9*	*81.6*	145.0
58794	Y	180	122	127	*67.8*	*70.6*	*104.1*	*84.1*	143.0
59658	Y	169	128	128	*75.7*	*75.7*	*100.0*	*86.2*	141.7
University of Göttingen (Spengel, 1874)									
374	Adult	188	135	...	*71.8*	....	.....	....	.....
375	Adult	178	134	...	*75.3*	....	.....	....	.....
University of Cambridge (Duckworth, 1895)									
1872	Adult	181	133	139	*73.5*	*76.8*	*104.5*	*88.5*	151.0
1873	Adult	180	128	129	*71.1*	*71.7*	*100.8*	*83.8*	145.7
Dresden Museum (Oetteking, 1908)¶									
3917	Adult	180	131	135	*72.8*	*75.0*	*103.0*	*86.8*	148.7
3920	Adult	174	129	133	*74.1*	*76.4*	*103.1*	*87.8*	145.3
3921	Adult	178	135	128	*75.8*	*71.9*	*94.8*	*81.8*	147.0
3924	Adult	171	126	128	*73.7*	*74.8*	*101.6*	*86.2*	141.7

† Except where age is known, three age groups have been distinguished: Y, young adult (up to 35); M, middle-aged (35–50); O, old (50–).

¶ Sex identification made in Germany at request of Dr. Oetteking (1937).

APPENDIX A2

Measurements of Individual Skulls

Cat. No.	Fr. min. diam.	Ment.-nas. ht.	Alv. pt.-nas. ht.	Biz. max. diam.	Facial index total	Facial index upper	Bas.-nas.	Bas.-alv. pt.
Field Museum			*Recent grave series: male*					
192005	91	(114)	(61)	136*	(*83.8*)	(*44.8*)	(99)	(99)
192006	93	130¶	77	133	*97.7*	*57.9*	98	102
192007	98	124¶	(75)	140	*88.6*	*53.6*	105	113
192008	90	129	(76)	130	*99.2*	(*58.5*)	104	(100)
192009	86	131	76	130	*100.8*	*58.5*	93	91
192010	96	135	82	135	*100.0*	*60.7*	99	105
192011	98	...	..	...	.....	....	111*	...
192012	89	...	..	...	.....	....	...	...
192013	90	130	77	127	*102.4*	*60.6*	97	97
192015	92	...	..	...	.....	....	...	...
192016	92	124	73	...	.....	....	96	93
192017	92	(117)	(68)	...	.....	....	105	...
			Recent grave series: female					
192018	85	...	69	130*	.....	*53.1*	96	94
192019	86	...	..	...	.....	....	...	...
192020	96	126	77	126	*100.0*	*61.1*	...	...
192022	90	...	..	...	.....	....	...	...
192023	94	...	..	...	.....	....	100	...
192024	82	...	..	...	.....	....	...	...
192025	86	120	72	125	*96.0*	*57.6*	96	89
192026	84	...	..	...	.....	....	...	...
			Old stone grave series: male					
192001	94	...	72	134	.....	*53.7*	105	101
192028	99	...	..	...	.....	....	99	...
192033	96	124	73	...	.....	....	102	98
192036	98	131	77	147*	*89.1*	*52.4*	107*	109*
192038	98	115¶	71	...	.....	....	103	103
Peabody Museum								
2708	92	125	74	141	*88.6*	*52.5*	106	97
47871	98	...	70	126	.....	*55.6*	102	102
47990	92	...	72	(136)	.....	(*52.9*)	109	104
47992	91	128	78	136	*94.1*	*57.4*	108	101
47993	98	117	72	129	*90.7*	*55.8*	101	100
57326	92	...	74	136	.....	*54.4*	103	104
57328	90	...	79	(145)	.....	(*54.5*)	111	111
57331	90	...	69	133	.....	*51.9*	88	93
57333	97	...	79	140	.....	*56.4*	91	94
57335	94	...	73	142	.....	*51.4*	103	105
57336	91	...	69	133	.....	*51.9*	100	99
57337	94	...	79	137	.....	*57.7*	104	107*
57339	92	...	80	143	.....	*55.9*	113	110
57358	99	...	73	140	.....	*52.1*	101	103
58795	94	122	72	128	*95.3*	*56.2*	103	100
59657	95	...	79	133	.....	*59.4*	102	101

* Measurement approximate; estimated measurements are shown in parentheses and have not been included in the calculations.

¶ Measurement altered by tooth wear.

MEASUREMENTS OF INDIVIDUAL SKULLS—*Continued*

Cat. No.	Fr. min. diam.	Ment.-nas. ht.	Alv. pt.-nas. ht.	Biz. max. diam.	Facial index total	Facial index upper	Bas.-nas.	Bas.-alv. pt.
University of Göttingen (Spengel, 1874)								
371	98	...	74	133	....	*55.6*	...	...
372	100	...	70	136	....	*51.5*	...	...
373	91	...	73	129	....	*56.6*	...	...
Collection? (Virchow, 1880)								
....	...	120	..	141	*85.1*	....	...	...
University of Cambridge (Duckworth, 1895)								
1868	...	...	..	...	....	....	101	104
1869	...	...	..	...	....	....	107	...
1870	...	...	..	...	....	....	...	...
1871	...	...	..	...	....	....	...	...
Lausanne Museum (Schenk, 1899)								
1	97	...	74	137	....	*54.0*	106	103
2	97	...	74	134	....	*55.2*	102	100
Paris Museum of "Comparative Anatomy" (Sergi, 1901)								
10241	...	124	76	134	*92.5*	*56.7*	...	...
10244	...	123	76	150	*82.0*	*50.7*	...	...
Dresden Museum (Oetteking, 1908)								
1440	106	...	75	136	....	*55.1*	102	98
3918	99	...	71	...	....	....	104	102*
3922	93	...	78	134*	....	*58.2*	102	95
3923	93	123	72	134	*91.8*	*53.7*	103	100
3925	97	126*	78	145	*86.9*	*53.8*	101	100
Field Museum			*Old stone grave series: female*					
192027	96	...	71	(126)	....	(*56.3*)	99	99
192029	90	...	65	129	....	*50.4*	100	97
192030	94	...	68*	128	....	*53.1*	98	100
192031	87	...	65	126*	....	*51.6*	99	98
192032	96	...	74	134	....	*55.2*	107	107
192034	85	...	..	...	....	....	99*	...
192037	94	123	73	...	....	....	...	...
Peabody Museum								
47873	92	120	74	129	*93.0*	*57.4*	104	105
47874	86	...	65*	...	....	....	87	89*
47875	85	...	70	123	....	*56.9*	97	93
47989	90	115	71*	128	*89.8*	*55.5*	93	92*
47994	93	111¶	73	127	*87.4*	*57.5*	97	99
47995	88	115	70	133	*86.5*	*52.6*	100	97
47996	90	...	67	133	....	*50.4*	97	96
47997	86	...	65	122	....	*53.3*	90	89
47999	89	...	..	...	....	....	97	...
57327	93	...	69	...	....	....	96*	101*
57329	85	...	65	121	....	*53.7*	87	87
57332	86	...	69	128	....	*53.9*	92	104

* Measurement approximate; estimated measurements are shown in parentheses and have not been included in the calculations.

¶ Measurement altered by tooth wear.

MEASUREMENTS OF INDIVIDUAL SKULLS—*Continued*

Cat. No.	Fr. min. diam.	Ment.-nas. ht.	Alv. pt.-nas. ht.	Biz. max. diam.	Facial index total	Facial index upper	Bas.-nas.	Bas.-alv. pt.
Peabody Museum—*Continued*								
57338	93	117	71	...	.....	....	102	95
57341	88	(113)	69	124	*(91.1)*	*55.6*	100	98
57343	95	(105)	65	128	*(82.0)*	*50.8*	101	95
57344	90	...	69	132	.....	*52.3*	99	97
57345	88	...	(68)	130	.....	*(52.3)*	103	(94)
57346	91	...	66	123	.....	*53.6*	99	98
57351A	90	...	..	...	.....	....	104*	...
57475	90	111	70	131	*84.7*	*53.4*	105	103
57476	92	...	71	135	.....	*52.6*	101	102
58794	87	109	65	...	.....	....	99	97
59658	89	...	74	127	.....	*58.3*	92	95
University of Göttingen (Spengel, 1874)								
374	94	...	70	135	.....	*51.8*	...	...
375	97	...	75	128	.....	*58.6*	...	...
University of Cambridge (Duckworth, 1895)								
1872	...	...	..	...	.....	....	106	98
1873	...	...	..	...	.....	....	97	91
Dresden Museum (Oetteking, 1908)								
3917	86	116	72	136	*85.3*	*52.9*	100	94
3920	85	...	63	120	....	*52.5*	93	96
3921	89	120	73	124	*96.8*	*58.9*	94	92
3924	91	120	64	131*	*91.6*	*48.8*	100	96

* Measurement approximate; estimated measurements are shown in parentheses and have not been included in the calculations.

APPENDIX A3

Measurements of Individual Skulls

Cat. No.	Orb. ht. mean	Orb. br. mean	Orb. index mean	Nasal ht.	Nasal br.	Nasal index	Lt. upper alv. arch	Br. upper alv. arch	Alv. arch index
Field Museum			*Recent grave series: male*						
192005	....	....	....	..	..	....	51*	64	*125.5*
192006	35.0	40.0	*87.5*	50	22	*44.0*	57	61	*107.0*
192007	31.5	39.5	*79.7*	46*	25	*54.3*	58	64*	*110.3*
192008	36.0	38.5*	*93.5*	56	21	*37.5*	..	..	.....
192009	35.8	37.0	*96.8*	50	21	*42.0*	52	62	*119.2*
192010	38.0	40.0	*95.0*	54	24	*44.4*	60	64	*106.7*
192011	....	....	....	..	..	....	..	..	.....
192012	....	....	....	..	23	....	54	65	*120.4*
192013	36.5	37.0	*98.6*	51	22	*43.1*	53	62	*117.0*
192015	....	....	....	..	..	....	..	..	.....
192016	38.0	39.5	*96.2*	49	22	*44.9*	55	62	*112.7*
192017	....	....	....	..	..	....	..	..	.....
			Recent grave series: female						
192018	38.2	39.8	*96.0*	52	21	*40.4*	50	56*	*112.0*
192019	....	....	....	..	..	....	..	..	.....
192020	36.0	39.5	*91.1*	50	23	*46.0*	58	60	*103.4*
192022	....	....	....	..	..	....	..	..	.....
192023	....	....	....	..	..	....	48	64	*133.3*
192024	....	....	....	..	..	....	..	..	.....
192025	33.0R	(38.0)	*(88.2)*	49	..	....	51	60	*117.6*
192026	34.0L	36.0L	*94.4*L	..	..	....	..	..	.....
			Old stone grave series: male						
192001	35.0	41.0	*85.4*	50	25	*50.0*	53	68	*128.3*
192028	....	....	....	..	..	....	52	61	*117.3*
192033	36.0	38.8	*92.8*	50	20	*40.0*	51	57	*111.8*
192036	....	....	....	53	23	*43.4*	56	67	*119.6*
192038	35.0	40.0	*87.5*	50	22	*44.0*	55	65	*118.2*
Peabody Museum									
2708	37.0L	41.5	*89.2*L	52	23	*44.2*	49	67	*136.7*
47871	35.5	39.0	*91.0*	51	22	*43.1*	54	64	*118.5*
47990	32.5	39.5	*82.3*	50	24	*48.0*	55	63	*114.5*
47992	35.5	37.2	*95.4*	55	18	*32.7*	52	63	*121.2*
47993	36.2	40.5	*89.4*	50	22	*44.0*	52	58	*111.5*
57326	35.2	39.5	*89.1*	51	22	*43.1*	58	65	*112.1*
57328	37.2	42.0L	*88.1*L	54	25	*46.3*	60	66*	*110.0*
57331	36.5	38.2	*95.5*	50	21	*42.0*	54	63	*116.7*
57333	38.5	40.0	*96.2*	55	22	*40.0*	54	61	*113.0*
57335	34.0	40.0	*85.0*	51	24	*47.0*	54	(62)	*(114.8)*
57336	34.2	39.5	*86.6*	50	21	*42.0*	52*	..	.....
57337	36.8	40.2	*91.5*	55	22	*40.0*	58*	65	*112.1*
57339	40.8	45.0	*90.7*	58	22	*37.9*	56	62	*110.7*

L= left orbit

R= right orbit

* Measurement approximate; estimated measurements are shown in parentheses and have not been included in the calculations.

MEASUREMENTS OF INDIVIDUAL SKULLS—*Continued*

Cat. No.	Orb. ht. mean	Orb. br. mean	Orb. index mean	Nasal ht.	Nasal br.	Nasal index	Lt. upper alv. arch	Br. upper alv. arch	Alv. arch index
Peabody Museum—*Continued*									
57358	35.0	40.5	*86.4*	50	25	*50.0*	..	..	.....
58795	33.5	37.5	*89.3*	52	22	*42.3*	56	65	*116.1*
59657	38.5	38.5	*100.0*	52	23	*44.2*	57	..	.....
University of Göttingen (Spengel, 1874)									
371	....	....	....	..	..	....	..	..	.....
372	....	....	....	..	..	....	..	..	.....
373	....	....	....	..	..	....	..	..	.....
Collection? (Virchow, 1880)									
....	37.0	44.0	*84.1*	54	24	*44.4*	..	..	.....
University of Cambridge (Duckworth, 1895)									
1868	36.0	39.0	*92.3*	48	24	*50.0*	..	..	.....
1869	38.0	43.0	*88.4*	..	..	....	..	..	.....
1870	....	....	....	..	..	....	..	..	.....
1871	....	....	....	..	..	....	..	..	.....
Lausanne Museum (Schenk, 1899)									
1	....	....	....	56	23	*41.1*	..	..	.....
2	....	....	....	52	24	*46.2*	..	..	.....
Paris Museum of "Comparative Anatomy" (Sergi, 1901)									
10241	35.0	40.0	*87.5*	55	21	*38.2*	..	..	.....
10244	35.0	40.0	*87.5*	56	22	*39.3*	..	..	.....
Dresden Museum (Oetteking, 1908)									
1440	37.0	40.0	*92.5*	52	23	*44.2*	54	63	*116.7*
3918	36.0	....	....	53*	26	*49.0*	52	66	*126.9*
3922	36.0	41.0	*87.8*	54	22	*40.7*	50	62	*124.0*
3923	35.0	39.0	*89.7*	50	21	*42.0*	55	68	*123.6*
3925	37.0	....	....	56	22	*39.3*	52	66	*126.9*
Field Museum			*Old stone grave series: female*						
192027	34.5	38.5	*89.6*	50	24	*48.0*	52	61	*117.3*
192029	34.8	39.2	*88.8*	48	22	*45.8*	49	58	*118.4*
192030	37.0L	39.5L	*93.7*L	48	21	*43.8*	..	..	.....
192031	35.0	38.8	*90.2*	49	24	*49.0*	51	63	*123.5*
192032	36.0L	40.0L	*90.0*L	50*	..	....	54*	..	.....
192034	....	....	....	..	..	....	..	..	.....
192037	34.5	37.0	*93.2*	52	22	*42.3*	52	65	*125.0*
Peabody Museum									
47873	35.2	40.5	*86.9*	50	22	*44.0*	55	65	*118.2*
47874	32.0R	35.0R	*91.4*R	47	20	*42.6*	51	..	.....
47875	33.5	35.0	*95.7*	53	22	*41.5*	50	62	*124.0*
47989	34.5	37.5	*92.0*	49	23	*46.9*	50*	..	.....
47994	34.8	38.0	*91.6*	43	22	*51.2*	55	63	*114.5*

L = left orbit
R = right orbit
* Measurement approximate; estimated measurements are shown in parentheses and have not been included in the calculations.

MEASUREMENTS OF INDIVIDUAL SKULLS—*Continued*

Cat. No.	Orb. ht. mean	Orb. br. mean	Orb. index mean	Nasal ht.	Nasal br.	Nasal index	Lt. upper alv. arch	Br. upper alv. arch	Alv. arch index
Peabody Museum—*Continued*									
47995	35.0	37.0	*94.6*	49	24	*49.0*	50	62	*124.0*
47996	37.0	40.8	*90.7*	48	22	*45.8*	49	56	*114.3*
47997	34.5	36.0	*95.8*	44	21	*47.7*	51	..	.....
47999	....	....	....	48	..	....	..	..	.....
57327	....	....	....	46	22	*47.8*	55*	64	*116.4*
57329	32.5	35.5	*91.5*	48	19	*39.6*	49	54	*110.2*
57332	32.0	39.2	*81.6*	49	25	*51.0*	56	67	*119.6*
57338	34.2	39.0	*87.7*	51	23	*45.1*	(51)	64	(*125.5*)
57341	35.2	36.0	*97.8*	49	19	*38.8*	53	61	*115.1*
57343	32.0	37.0	*86.5*	48	19	*39.6*	50	57	*114.0*
57344	35.0	38.5	*90.9*	48	20	*41.7*	54	67	*124.1*
57345	38.5	40.0	*96.2*	54	21	*38.9*	..	..	.....
57346	34.0	38.0	*89.5*	48	23	*47.9*	53	61	*115.1*
57351A	....	....	....	..	..	....	..	..	.....
57475	34.2	38.2	*89.5*	50	22	*44.0*	53	61	*115.1*
57476	34.5	38.0	*90.8*	50	22	*44.0*	55	66	*120.0*
58794	36.0L	39.0L	*92.3*L	44	23	*52.3*	52	56	*107.7*
59658	37.8	42.0	*90.0*	50	23	*46.0*	54	64	*118.5*
University of Göttingen (Spengel, 1874)									
374	....	....	....	..	..	....	..	..	.....
375	....	....	....	..	..	....	..	..	.....
University of Cambridge (Duckworth, 1895)									
1872	37.0	41.0	*90.2*	57	23	*40.4*	..	..	.....
1873	36.0	38.0	*94.7*	50	22	*44.0*	..	..	.....
Dresden Museum (Oetteking, 1908)									
3917	37.0	37.0	*100.0*	51	27	*52.9*	49	63	*128.6*
3920	33.0	37.0R	*89.1*R	45	19	*42.2*	48	59	*122.9*
3921	39.0R	39.0R	*100.0*R	50	19	*38.0*	51	63	*123.5*
3924	35.0	....	.....	50	21	*42.0*	50	63	*126.0*

L = left orbit
R = right orbit
* Measurement approximate; estimated measurements are shown in parentheses and have not been included in the calculations.

APPENDIX B1

MEASUREMENTS OF INDIVIDUAL HUMERI

Cat. No.	Max. lt.	Max. diam. at middle	Min. diam. at middle	Index at middle	Max. lt.	Max. diam. at middle	Min. diam. at middle	Index at middle
	RIGHT				LEFT			
Field Museum			*Recent grave series: male*					
192005	300	23	17	*73.9*	293	23	17	*73.9*
192006	303	22	16	*72.7*	293	24	16	*66.7*
192007	275	25	18	*72.0*	270	24	18	*75.0*
192008	309	25	18	*72.0*	301	23	17	*73.9*
192009	...	....	....	....	298	19	17	*89.5*
192010	313	24	16	*66.7*	313	23	16	*69.6*
192011	304	24	18	*75.0*	296	22	17	*77.3*
192012	303	23.5	18	*76.6*	296	22	18	*81.8*
192014	297	24	19.5	*81.2*	289	23	18	*78.3*
192015	298*	22	19	*86.4*	...	..	....	....
192016	305	26	19	*73.1*	...	..	....	....
192017	316	26	19	*73.1*	310	25	19.5	*78.0*
			Recent grave series: female					
192018	295	22	17	*77.3*	294	21	17	*81.0*
192019	264	21	15	*71.4*	256	21	15	*71.4*
192020	292	19	14.5	*76.3*	284	18	14.5	*80.6*
192023a	280	20	13	*65.0*	275	19	14	*73.7*
192024	...	....	....	....	279	21	16	*76.2*
192025	275	20.5	13.5	*65.8*	270	20	13	*65.0*
192026	253	18	14	*77.8*	245	18	14	*77.8*
			Old stone grave series: male					
192001	291	22	16	*72.7*	282	20	15	*75.0*
192004	...	....	....	....	307	20	19	*95.0*
192033	302	22	18.5	*84.1*	296	21	18	*85.7*
Peabody Museum								
47992	298	21	14	*66.7*	...	..	....	....
47998C1	294	21	18	*85.7*	287	21	18	*85.7*
47998C2	294	21	16	*76.2*	...	..	....	....
47998C3	...	....	....	....	286	21	16	*76.2*
57352–2	...	....	....	....	297	27	19	*70.4*
57354	...	....	....	....	304	25	20	*80.0*
57360–1	285	21	18	*85.7*	282	20	17	*85.0*
61604	297	25	19	*76.0*	296	23	19	*82.6*
Museum of the American Indian (Oetteking, 1931)								
897	...	....	....	....	298	22	17	*77.3*
Field Museum			*Old stone grave series: female*					
192029	266	18	14	*77.8*	262	17	14	*82.4*
192039	275	23.5	16	*68.1*	...	..	....	....
Peabody Museum								
47998C4	...	....	....	....	295	19	13	*68.4*
57348	286	20	13	*65.0*	277	20	13	*65.0*
57352–1	...	....	....	....	303	20	16	*80.0*
57356	273	21	16	*76.2*	268	20	15	*75.0*
57360–2	...	....	....	....	265	20	14	*70.0*

* Measurement approximate; estimated measurements are shown in parentheses and have not been included in the calculations.

APPENDIX B2

Measurements of Individual Radii; Relationships of Individual Long Bones

Cat. No.	Radius: max. lt. (Right)	Hum.-rad. index (Right)	Fem.-tib. index (Right)	Hum.-fem. index (Right)	Radius: max. lt. (Left)	Hum.-rad. index (Left)	Fem.-tib. index (Left)	Hum.-fem. index (Left)
Field Museum			Recent grave series: male					
192005	220	73.3	78.8	71.6	214	73.0	78.4	69.6
192006	...	....	82.0	73.5	...	....	82.4	71.6
192007	193	70.2	76.7	71.0	...	....	77.2	69.9
192008	216	69.9	75.8	69.9	213	70.8	75.7	68.4
192009	222	....	81.1	....	224	75.2	81.2	72.7
192010	224	71.6	83.0	72.0	...	....	82.2	72.3
192011	...	....	78.8	74.9	215	72.6	78.8	73.1
192012	222	73.3	79.3	71.3	...	....	78.0	70.0
192014	...	....	80.3	73.2	216	74.7	79.8	70.5
192015	...	....	77.1	71.8	...	....	76.4	....
192016	...	....	79.7	69.5	...	....	79.0	....
192017	218	69.0	79.3	72.8	...	....	79.7	71.4
			Recent grave series: female					
192018	...	....	76.7	74.7	207	70.4	77.4	75.4
192019	182	68.9	77.2	71.7	182	71.1	76.1	68.6
192023	...	....	78.0	....	...	....	76.9	....
192023a	190	67.8	77.5	72.5	187	68.0	77.1	71.4
192024	...	....	78.3	....	...	....	79.4	69.2
192025	197	71.6	75.4	71.0	192	71.1	77.7	70.9
192026	...	....	....	72.7	...	....	....	....
			Old stone grave series: male					
192004	...	....	....	....	...	....	....	70.2
192033	...	....	....	....	...	....	....	71.5
192036	235	....	82.9	....	233	....	....	....
Peabody Museum								
47992	...	....	....	....	203	....	80.8	....
47998G1	...	....	....	....	215	....	....	....
47998G2	202	....	....	....	...	....	....	....
57352–1	...	....	....	....	211	....	....	....
57352–2	220	....	....	....	218	....	....	....
57354	...	....	....	....	230	75.6	....	....
61604	...	....	....	70.7	...	....	....	....
Museum of the American Indian (Oetteking, 1931)								
897	...	....	79.0	....	...	....	....	70.4
Field Museum			Old stone grave series: female					
192029	...	....	75.1	72.7	...	....	....	71.6
192037	...	....	80.2	....	...	....	....	....
Peabody Museum								
47998G3	...	....	....	....	208	....	....	....
57348	208	72.7	....	....	...	....	....	....
57356	190	69.6	....	....	192	71.6	....	....

APPENDIX B3

Measurements of Individual Femora

Cat. No.	Max. lt.	Bicond. lt.	Ant.-post. diam.	Lateral diam.	Index at middle	Max. diam. upper flat.	Min. diam. upper flat.	Platymeric index
				Right				
Field Museum				*Recent grave series: male*				
192005	422	419	28.5	25	*87.7*	31	26	*83.9*
192006	412	412	32	27	*84.4*	31	26	*83.9*
192007	391	387	28.5	25	*87.7*	31	23	*74.2*
192008	443	442	31	26	*83.9*	30	26	*86.7*
192009	410	408	27	26	*96.3*	31	23	*74.2*
192010	438	435	35.5	27.5	*77.5*	31	26	*83.9*
192011	411	406	29.5	25	*84.7*	30	22	*73.3*
192012	427	425	31	27	*87.1*	29	26	*89.6*
192014	411	406	33	28	*84.8*	34	27	*79.4*
192015	417	415	26	26	*100.0*	33	23.5	*71.2*
192016	440	439	34	27.5	*80.9*	34	27	*79.4*
192017	435	434	29	29	*100.0*	35	25	*71.4*
				Recent grave series: female				
192018	396	395	28	29	*103.6*	31	25	*80.6*
192019	373	368	25	23	*92.0*	28	21	*75.0*
192022	408	401	26	22	*84.6*	29	21	*72.4*
192023	391	387	25	24	*96.0*	29	21	*72.4*
192023a	390	386	27	25	*92.6*	30	22	*73.3*
192024	409	406	28	27	*96.4*	32	23	*71.9*
192025	392	387	25	22	*88.0*	25	21	*84.0*
192026	349	348	23.5	21	*89.4*	25	20.5	*82.0*
				Old stone grave series: male				
192004	438	436	29	26	*89.6*	31	25.5	*82.2*
192036	446	444	32	29	*90.6*	38	25	*65.8*
Peabody Museum								
47998A1	434	433	32	28	*87.5*	33	26	*78.8*
47998A2	430	429	33	30	*90.9*	36	26	*72.2*
47998A3	421	415	30	27	*90.0*	32	25	*78.1*
47998B	403	395	25	26	*104.0*	30	22	*73.3*
47998A4	410	402	25	27	*108.0*	31	24	*77.4*
57352–1	(435)	435	29	26	*89.6*	31	24	*77.4*
57352–2	434	432	33	28	*84.8*	33	26	*78.8*
61604	422	420	32	27	*84.4*	34	23	*67.6*
Museum of the American Indian (Oetteking, 1931)								
897	429	424	32	29	*90.6*	32	30	*93.7*
Field Museum				*Old stone grave series: female*				
192029	370	366	25	23	*92.0*	27	21	*77.8*
192037	397	395	26	24	*92.3*	29	22	*75.9*
Peabody Museum								
47998A5	385	383	26	25	*96.2*	30	21	*70.0*
57360–1	386	382*	25	23	*92.0*	31	19	*61.3*

* Measurement approximate; estimated measurements are shown in parentheses and have not been included in the calculations.

MEASUREMENTS OF INDIVIDUAL FEMORA—*Continued*

Cat. No.	Max. lt.	Bicond. lt.	Ant.-post. diam.	Lateral diam.	Index at middle	Max. diam. upper flat.	Min. diam. upper flat.	Platymeric index
				LEFT				
Field Museum				*Recent grave series: male*				
192005	423	421	28	26	*92.8*	32	26.5	*82.8*
192006	411	409	31	26	*83.9*	31	25	*80.6*
192007	390	386	28	24	*85.7*	32	22	*68.8*
192008	442	440	31.5	26.5	*84.1*	31	26	*83.9*
192009	412	410	26	25.5	*98.1*	30	23	*76.7*
192010	436	433	34.5	29	*84.0*	31	26	*83.9*
192011	409	405	28	24	*85.7*	32	23	*71.9*
192012	424	423	29.5	27	*91.5*	29	25	*86.2*
192014	413	410	32	28	*87.5*	36	27	*75.0*
192015	419	415	26	28	*107.7*	34	24	*70.6*
192016	440	438	35.5	29	*81.7*	33	28	*84.8*
192017	435	434	30	29	*96.7*	33	26	*78.8*
				Recent grave series: female				
192018	391	390	27	29.5	*109.2*	33	25	*75.8*
192019	376	373	25	23	*92.0*	28	21	*75.0*
192022	409	402	26	23	*88.5*	27	21	*77.8*
192023	387	385	25	24	*96.0*	30	23	*76.7*
192023a	390	385	27	26	*96.3*	29	23	*79.3*
192024	406	403	29	27	*93.1*	32	24	*75.0*
192025	386	381	25	22	*88.0*	25	21	*84.0*
				Old stone grave series: male				
192004	442*	437	29.5	26	*88.1*	32	24	*75.0*
192033	420	414	28	26	*92.8*	34	24	*70.6*
192036	450	445	31	30	*96.8*	36	25	*69.4*
Peabody Museum								
47992	417	412	29	27	*93.1*	32	25	*78.1*
47998A1	440	437	32	29	*90.6*	36	26	*72.2*
47998A2	440	437	33	27	*81.8*	33	26	*78.8*
47998A3	402	396	26	26	*100.0*	31	21	*67.7*
47998A4	419	411	30	27	*90.0*	32	25	*78.1*
57352–3	437*	433*	30	27	*90.0*	..	....	....
57360–2	428	426	32	27	*84.4*	33	24	*72.7*
Museum of the American Indian (Oetteking, 1931)								
897	426	423	30	29	*96.7*	33	29	*87.9*
Field Museum				*Old stone grave series: female*				
192029	370	366	25	22.5	*90.0*	26	20	*76.9*
192037	397	391	....	24	.....	28	21	*75.0*
Peabody Museum								
47998A5	384	382	26	26	*100.0*	29	22	*75.9*
47998A6	411	402	23	26	*113.0*	29	20	*69.0*
57360–1	387*	385*	25	24	*96.0*	30	21	*70.0*

* Measurement approximate; estimated measurements are shown in parentheses and have not been included in the calculations.

APPENDIX B4

MEASUREMENTS OF INDIVIDUAL TIBIAE

Cat. No.	Physiol. lt.	Ant.-post. diam.	Lateral diam.	Index at middle	Physiol. lt.	Ant.-post. diam.	Lateral diam.	Index at middle
		RIGHT					LEFT	
Field Museum			*Recent grave series: male*					
192005	330	29.5	21	*71.2*	330	29.5	19.5	*66.1*
192006	338	28.5	18	*63.2*	337	29.5	18	*61.0*
192007	297	27	21	*77.8*	298	26	21	*80.8*
192008	335	28	20	*71.4*	333	29	21	*72.4*
192009	331	28	19.5	*69.6*	333	27	19	*70.4*
192010	361	31	20.5	*66.1*	356	31	19.5	*62.9*
192011	320	29.5	21	*71.2*	319	29	21	*72.4*
192012	337	30	18	*60.0*	330	28	19	*67.8*
192014	326	30	22	*73.3*	327	31	22	*71.0*
192015	320	28	19	*67.8*	317	28.5	19	*66.7*
192016	350	29	23.5	*81.0*	346*	29.5	24	*81.4*
192017	344	31	21	*67.7*	346	31	21	*67.7*
			Recent grave series: female					
192018	303	28	16	*57.1*	302	28	16.5	*58.9*
192019	284	23	19.5	*84.8*	284	23	19	*82.6*
192020	305	26	16	*61.5*	306	25	17	*68.0*
192023	302	25	18	*72.0*	296	23	18	*78.3*
192023a	299	26	18	*69.2*	297	25	18	*72.0*
192024	318	27	21	*77.8*	320	27	21	*77.8*
192025	292	23.5	15	*63.8*	296	24	15	*62.5*
192026	...	....	....	....	285	23	17	*73.9*
			Old stone grave series: male					
192036	368	29	24	*82.8*	...	....	....	....
Peabody Museum								
2707A	...	....	....	....	338	27	21	*77.8*
47992	331	29	22	*75.9*	333	30	21	*70.0*
47998D1	344	30	21	*70.0*	...	....	....	....
47998D2	317	27	20	*74.1*	...	....	....	....
57352–1	344	28	22	*78.6*	...	....	....	....
57352–2	359	30	23	*76.7*	358	30	22	*73.3*
57360–1	349	32	26	*81.2*	350	32	25	*78.1*
Museum of the American Indian (Oetteking, 1931)								
897	335	32	20	*62.5*	...	....	....	....
Field Museum			*Old stone grave series: female*					
192029	275	24	19	*79.2*	...	....	....	....
192037	317	25	20	*80.0*	...	....	....	....
Peabody Museum								
2708C	327	26	19	*73.1*	...	....	....	....
47998D3	...	....	....	....	312	26	19	*73.1*
57348	319	25	19	*76.0*	320	24	19	*79.2*
57356	300	26	18	*69.2*	296	26	18	*69.2*
57360–2	314	25	18	*72.0*	315	25	18	*72.0*
57360–3	...	....	....	....	325	28	19	*67.8*

* Measurement approximate; estimated measurements are shown in parentheses and have not been included in the calculations.

APPENDIX C1

Individual Measurements on the Living

Number	Age	Birthplace	Stature	Sitting height	Rel. sit. height	Head length	Head breadth	Cephalic index
Strong			*Eskimo: Male*					
9	20	?	161.1	85.0	*52.8*	194	142	*73.2*
10	22	Hebron	169.7	89.0	*52.4*	204	144	*70.6*
13	44	Ramah	155.2	82.5	*53.2*	200	144	*72.0*
19	old	?	161.0	81.0	*50.3*	194	148	*76.3*
21	31	Hebron	156.0	(98.0)	....	202	164	*81.2*
26	29	Nain	157.0	83.0	*52.9*	184	147	*79.9*
28	57	Hebron	148.0	74.0	*50.0*	201	152	*75.6*
29	18	Nain	151.0	72.0	*47.7*	184	151	*82.1*
30	22	Nain	149.0	74.0	*49.7*	177	148	*83.6*
73	25	?	158.1	84.0	*53.1*	180	145	*80.6*
77	58	?	154.2	78.9	*51.2*	182	148	*81.3*
79	66	?	157.1	84.1	*53.5*	199	150	*75.4*
80	45	?	162.5	84.0	*51.7*	192	146	*76.0*
85	38	?	158.7	84.5	*53.2*	196	145	*74.0*
98	70	?	158.2	78.5	*49.6*	192	156	*81.2*
99	57	?	155.8	82.6	*53.0*	192	148	*77.1*
100	60(n.)	?	156.2	81.5	*52.2*	191	133	*69.6*
101	35	?	172.1	87.2	*50.7*	202	146	*72.3*
102	62	?	158.7	80.8	*50.9*	199	144	*72.4*
104	25	?	158.8	82.2	*51.8*	185	147	*79.4*
106	20	?	163.4	86.1	*52.7*	194	149	*76.8*
109	44	?	162.8	82.6	*50.7*	187	152	*81.3*
113	52	?	157.3	78.4	*49.8*	191	148	*77.5*
114	23	?	158.3	81.4	*51.4*	200	150	*75.0*
116	78	?	154.3	77.2	*50.0*	197	148	*75.1*
117	38	?	164.0	84.2	*51.3*	198	151	*76.3*
120	19	?	155.8	78.5	*50.4*	188	154	*81.9*
128	54	Okak	158.9	84.9	*53.4*	198	149	*75.2*
131	24	Nain	157.2	80.2	*51.0*	192	150	*78.1*
133	23	Nain	158.0	83.7	*53.0*	192	148	*77.1*
134	31	Hebron	158.3	82.8	*52.3*	187	144	*77.0*
146	69	Hopedale	172.0	85.0	*49.4*	188	148	*78.7*
151	26	Okak	144.0	70.7	*49.1*	186	150	*80.6*
158	25	Okak	162.1	85.1	*52.5*	191	153	*80.1*
161	30	Nain	157.2	83.1	*52.9*	192	153	*79.7*
164	43	Nain	153.5	81.9	*53.4*	196	155	*79.1*
167	66	Okak	169.4	84.0	*49.6*	194	148	*76.3*
171	63	Nain	151.3	82.7	*54.6*	186	141	*75.8*
173	68	Nain	163.7	81.1	*49.5*	191	134	*70.2*
175	25	Nain	155.3	80.2	*51.6*	180	147	*81.7*
178	54	Nain	159.5	83.5	*52.4*	197	153	*77.7*
179	63	Okak	146.1	75.9	*52.0*	187	145	*77.5*
186	44	Nain	163.7	85.3	*52.1*	197	151	*76.6*
187	39	Okak	163.4	80.6	*49.3*	186	152	*81.7*
188	38	Nain	156.5	82.0	*52.4*	184	149	*81.0*
189	75	Zoar	154.2	81.0	*52.5*	191	149	*78.0*
190	43	Nain	157.7	83.3	*52.8*	188	146	*77.6*
191	24	Hopedale	159.4	85.0	*53.3*	190	150	*78.9*
192	34	Nain	165.5	86.9	*52.5*	195	149	*76.4*

INDIVIDUAL MEASUREMENTS ON THE LIVING—*Continued*

Number	Age	Birthplace	Stature	Sitting height	Rel. sit. height	Head length	Head breadth	Cephalic index
Strong—*Continued*								
193	58	Zoar	157.9	81.2	*51.4*	199	153	*76.9*
196	59	Okak	151.3	79.4	*52.5*	186	144	*77.4*
207	36	?	158.0	77.4	*49.0*	192	146	*76.0*
208	30	?	159.5	81.4	*51.0*	200	152	*76.0*
210	34	?	152.2	77.4	*50.8*	188	146	*77.6*
211	44	?	158.0	81.8	*51.8*	192	136	*70.8*
215	38	?	157.0	81.7	*52.0*	203	154	*75.9*
216	31	?	154.9	78.5	*50.7*	199	151	*75.9*
217	19	?	167.3	88.2	*52.7*	194	156	*80.4*
Lee								
10	40	Francis Har.	153.4	82.3	*53.6*	192	154	*80.2*
40	25	Hopedale	160.7	82.0	*51.0*	194	146	*75.2*
47	51	Hopedale	154.3	80.2	*52.0*	184	138	*75.0*
51	29	Hopedale	154.3	77.3	*50.1*	187	147	*78.6*
52	25	Hopedale	158.7	90.5	*57.0*	192	149	*77.6*
53	38	Hopedale	163.8	83.9	*51.2*	191	152	*79.6*
54	59	Nain	155.8	79.2	*50.8*	194	149	*76.8*
55	41	Manaska Is.	156.0	84.1	*53.9*	196	150	*76.5*
59	25	Davis In.	167.3	89.1	*53.2*	196	154	*78.6*
Sornberger								
1	35	Nachvak	154.8	81.8	*52.8*	197	148	*75.1*
3	35	Ungava Bay	157.0	83.5	*53.2*	199	145	*72.9*
6	37	Okak	158.5	84.6	*53.4*	195	165	*84.6*
8	42	Nain	155.5	83.0	*53.4*	191	146	*76.4*
14	17	Hamilton In.	151.8	81.0	*53.4*	187	143	*76.5*
17	48	C. Harrison	162.1	87.9	*54.2*	207	166.5	*80.4*
18	21	Webeck Har.	162.2	83.6	*51.5*	199	168	*84.4*
19	16	?Webeck	154.5	80.5	*52.1*	188	164	*87.2*
20	60	Hamilton In.	149.7	79.3	*53.0*	200	158	*79.0*
21	30	Hamilton In.	157.5	87.0	*55.2*	191	156	*81.7*
22	25	Hamilton In.	156.5	83.4	*53.3*	185	150	*81.1*
23	20	Hamilton In.	152.3	83.5	*54.8*	189	154	*81.5*
25	50	Hamilton In.	153.0	81.0	*52.9*	194	150	*77.3*
27	58	Hamilton In.	151.8	79.0	*52.0*	187	150	*80.2*
29	25	Hamilton In.	152.5	82.0	*53.8*	179	160	*89.4*
30	30	Hamilton In.	151.8	84.0	*55.3*	181	152	*84.0*
32	19	Black Brook	158.0	84.1	*53.2*	190	157	*82.6*
Pittard (1901)								
1	52	?	157.0	....	....	195	146	*74.9*
2	28	?	148.8	....	....	198	154	*77.8*
3	29	?	160.0	....	....	200	146	*73.0*
4	32	?	161.8	....	....	197	146	*74.1*
5	46	?	161.7	....	....	198	146	*73.7*
6	20	?	159.0	....	....	195	150	*76.9*
7	18	?	161.5	....	....	189	150	*79.4*
8	42	?	155.6	....	....	188	149	*79.2*
Virchow (1880)								
..	35	?	163.5	....	....	199	149	*74.9*
..	21	?	155.0	....	....	188	146	*77.6*
..	40	?	160.5	....	....	205	152	*74.1*

INDIVIDUAL MEASUREMENTS ON THE LIVING—*Continued*

Number	Age	Birthplace	Stature	Sitting height	Rel. sit. height	Head length	Head breadth	Cephalic index
Strong			*Indian: Male*					
1	20–30	?	166.2	85.4	*51.4*	188	144	*76.6*
2	25–35	?	177.4	89.4	*50.4*	190	146	*76.8*
3	20–30	?	168.2	84.6	*50.3*	188	148	*78.7*
4	25–40	?	157.6	81.0	*51.4*	196	148	*75.5*
32	34	?	162.6	84.5	*52.0*	180	137	*76.1*
33	33	?	163.2	86.1	*52.8*	184	131	*71.2*
34	55–60	?	.....	....	....	184	140	*76.1*
39	30–35	?	168.2	85.6	*50.9*	191	154	*80.6*
40	25–30	?	155.1	77.7	*50.1*	187	145	*77.5*
42	40–50	?	165.3	87.0	*52.6*	201	137	*68.2*
43	50–60	?	162.5	83.1	*51.1*	194	155	*79.9*
Strong			*Eskimo: Female*					
12	24	Nain	154.0	83.0	*53.9*	182	134	*73.6*
14	30	Hebron	153.9	84.0	*54.6*	184	143	*77.7*
16	39	Nain	147.0	81.6	*55.5*	184	135	*73.4*
22	37	Davis In.	142.0	71.0	*50.0*	186	150	*80.6*
52	32	?	150.5	83.4	*55.4*	182	146	*80.2*
54	67	?	148.6	79.5	*53.5*	192	140	*72.9*
55	50	?	154.1	84.6	*54.8*	184	130	*70.6*
56	64	?	147.6	77.5	*52.5*	188	142	*75.5*
57	45	?	151.4	80.7	*53.3*	186	144	*77.4*
59	31	?	148.5	79.7	*53.7*	180	134	*74.4*
60	59	?	140.1	72.6	*51.8*	172	134	*77.9*
61	49	?	148.0	76.1	*51.4*	186	148	*79.6*
62	50	?	145.3	80.7	*55.5*	184	130	*70.6*
63	51	?	143.6	78.2	*54.4*	181	142	*78.4*
64	58	?	149.2	77.6	*52.0*	187	138	*73.8*
65	66	?	151.5	82.3	*54.3*	194	148	*76.3*
66	25	?	152.1	80.0	*52.5*	187	137	*73.3*
67	48	?	148.3	79.1	*53.3*	186	136	*73.1*
68	39	?	146.3	71.6	*48.9*	184	134	*72.8*
70	31	?	151.0	79.6	*52.7*	182	134	*73.6*
71	42	?	146.6	80.3	*54.8*	178	143	*80.3*
72	30	?	148.6	78.6	*52.9*	178	135	*75.8*
76	74	?	143.9	77.3	*53.7*	186	132	*71.0*
88	71	?	141.0	73.0	*51.8*	190	140	*73.7*
90	22	?	151.4	77.1	*50.9*	182	147	*80.8*
91	64	?	150.0	78.2	*52.1*	182	142	*78.0*
92	73	?	144.0	77.3	*53.7*	188	137	*72.9*
93	45	?	148.6	77.6	*52.2*	188	150	*79.8*
94	26	?	148.6	80.2	*54.0*	186	135	*72.6*
95	36	?	151.1	82.3	*54.5*	184	144	*78.3*
96	25	?	152.6	81.8	*53.6*	184	140	*76.1*
97	22	?	145.8	78.0	*53.5*	179	140	*78.2*
110	25	?	145.1	74.0	*51.0*	170	140	*82.4*
111	56	?	136.4	75.9	*55.6*	180	141	*78.3*
112	17	?	152.3	80.3	*52.7*	178	147	*82.6*
118	18	?	152.1	80.3	*52.8*	188	151	*80.3*
119	24	?	142.8	74.5	*52.2*	176	132	*75.0*
121	56	?	154.0	71.0	*46.1*	189	148	*78.3*
127	33	Hebron	150.6	83.8	*55.6*	175	135	*77.1*
129	29	Hebron	145.0	78.3	*54.0*	186	142	*76.3*

INDIVIDUAL MEASUREMENTS ON THE LIVING—*Continued*

Number	Age	Birthplace	Stature	Sitting height	Rel. sit. height	Head length	Head breadth	Cephalic index
Strong—*Continued*								
130	59	Nain	145.3	78.4	*54.0*	190	144	*75.8*
132	55	Hebron	145.0	78.5	*54.1*	188	142	*75.5*
136	53	Nain	146.0	77.8	*53.3*	187	150	*80.2*
148	44	Nain	142.7	77.0	*54.0*	187	144	*77.0*
149	28	Nain	155.4	81.2	*52.2*	192	147	*76.6*
150	26	Nain	144.2	75.9	*52.6*	180	144	*80.0*
152	51	Nain	149.1	79.9	*53.6*	189	149	*78.8*
153	43	Nain	138.7	75.2	*54.2*	179	144	*80.4*
154	21	Nain	145.6	77.7	*53.4*	172	144	*83.7*
159	21	Nain	146.0	80.8	*55.3*	176	142	*80.7*
160	29	Nain	150.5	83.7	*55.6*	181	144	*79.6*
163	52	Nain	144.6	79.1	*54.7*	186	143	*76.9*
165	25	Nain	147.1	79.4	*54.0*	180	137	*76.1*
166	50	Nain	147.9	80.8	*54.6*	184	146	*79.3*
168	42	Nain	154.0	79.1	*51.4*	191	148	*77.5*
169	62	Nain	155.7	82.2	*52.8*	189	143	*75.7*
170	77	Nain	141.6	71.1	*50.2*	184	139	*75.5*
172	66	Okak	153.3	80.2	*52.3*	194	144	*74.2*
174	35	Hebron	148.4	81.5	*54.9*	186	147	*79.0*
176	31	Hebron	149.5	83.4	*55.8*	189	151	*79.9*
177	34	n. Zoar	153.2	81.2	*53.0*	184	139	*75.5*
180	72	Nain	146.2	76.1	*52.0*	190	148	*77.9*
182	63	Okak	149.4	79.6	*53.3*	190	143	*75.3*
184	56	Okak	152.5	81.2	*53.2*	193	147	*76.2*
185	63	Zoar	148.3	78.3	*52.8*	195	145	*74.4*
194	69	Okak	(144.0)	(73.9)	....	196	145	*74.0*
198	72	?	151.8	77.0	*50.7*	192	146	*76.0*
199	71	?	149.6	76.0	*50.8*	194	142	*73.2*
200	18	?	153.5	79.2	*51.6*	182	142	*78.0*
201	59	?	146.8	74.9	*51.0*	182	141	*77.5*
202	66	?	150.3	76.5	*50.9*	190	141	*74.2*
203	38	?	148.6	77.3	*52.0*	187	145	*77.5*
204	23	?	140.9	75.1	*53.3*	179	145	*81.0*
206	33	?	153.5	80.5	*52.4*	188	144	*76.6*
209	26	?	145.0	75.1	*51.8*	183	147	*80.3*
212	44	?	145.7	74.1	*50.8*	196	145	*74.0*
213	32	?	149.0	79.2	*53.2*	180	144	*80.0*
214	34	?	156.7	79.1	*50.5*	189	150	*79.4*
219	?	?	148.7	85.5	*57.5*	186	148	*79.6*
Lee								
12	50	Francis Har.	141.4	79.0	*55.9*	193	148	*76.7*
39	46	Hopedale	161.1	86.4	*53.6*	194	141	*72.7*
41	20	Hopedale	138.6	74.6	*53.8*	172	144	*83.7*
44	40	Hopedale	147.3	80.9	*54.9*	185	144	*77.8*
45	20	Hopedale	150.0	78.8	*52.5*	188	143	*76.1*
46	42	Hopedale	152.3	82.0	*53.8*	192	142	*74.0*
48	64	Hopedale	151.1	73.4	*48.6*	185	142	*76.8*
49	20	Hopedale	150.9	81.9	*54.3*	184	148	*80.4*
56	32	Manaska Is.	153.6	84.9	*55.3*	193	152	*78.8*
57	69	Aillik	149.9	79.5	*53.0*	189	147	*77.8*

INDIVIDUAL MEASUREMENTS ON THE LIVING—*Continued*

Number	Age	Birthplace	Stature	Sitting height	Rel. sit. height	Head length	Head breadth	Cephalic index
Sornberger								
5	17	Nachvak	137.4	78.5	*57.1*	185	124	*67.0*
9	38	Davis In.	152.4	85.0	*55.8*	192	160	*83.3*
24	25	Hamilton In.	144.0	75.2	*52.2*	(143)	(135)	....
26	17	Hamilton In.	148.0	79.9	*54.0*	190	144	*75.8*
Pittard (1901)								
1	17	?	161.2	....	....	186	144	*77.4*
2	old	?	155.2	....	....	196	147	*75.0*
4	19	?	147.5	....	....	190	142	*74.7*
6	52	?	160.6	....	....	197	144	*73.1*
7	25	?	158.4	....	....	191	143	*74.9*
8	old	?	150.8	....	....	196	145	*74.0*
Virchow (1880)								
..	24	?	152.4	....	....	192	131	*68.2*
..	..	?	144.8	....	....	189	143	*75.7*
			Indian: Female					
Strong								
5	20–30	?	149.5	80.1	*53.6*	180	142	*78.9*
6	30–40	?	159.6	81.3	*50.9*	180	136	*75.6*
7	20–30	?	144.0	73.3	*50.9*	182	142	*78.0*
8	30–35	?	157.7	82.7	*52.4*	184	144	*78.3*
37	20–25	?	153.0	82.0	*53.6*	188	148	*78.7*
38	20–25	?	154.3	78.1	*50.6*	188	147	*78.2*
41	25–30	?	155.3	82.0	*52.8*	187	149	*79.7*

APPENDIX C2

Individual Measurements on the Living

Number	Head height	Height-length index	Min. frontal diam.	Fronto-parietal index	Max. bizyg. diam.	Cephalo-facial index	Bigon. diam.	Gonio-zyg. index	Menton-crinion	Total facial index
Strong					*Eskimo: Male*					
9	124	*63.9*	112	*78.9*	140	*98.6*	112	*80.0*	187	*74.9*
10	117	*57.4*	110	*76.4*	142	*98.6*	124	*87.3*	216	*65.7*
13	118	*59.0*	112	*77.7*	148	*102.8*	114	*77.0*	202	*73.3*
19	131	*67.5*	...	....	142	*95.9*	125	*88.0*	222	*64.0*
21	142	*70.3*	...	....	152	*92.7*	122	*80.3*	206	*73.8*
26	121	*65.8*	...	....	131	*89.1*	100	*76.3*	198	*66.2*
28	143	*71.1*	...	....	133	*87.5*	122	*91.7*	210	*63.3*
29	144	*78.3*	...	....	148	*98.0*	116	*78.4*	190	*77.9*
30	138	*78.0*	...	....	137	*92.6*	112	*81.8*	182	*75.3*
73	124	*68.8*	110	*75.9*	138	*95.2*	114	*82.6*	178	*77.5*
77	121	*66.5*	102	*68.9*	140	*94.6*	120	*85.7*	204	*68.6*
79	128	*64.3*	107	*71.7*	146	*97.3*	127	*87.0*	209	*69.8*
80	118	*61.4*	104	*71.2*	142	*97.3*	118	*83.1*	190	*74.7*
85	126	*64.3*	104	*71.7*	147	*101.4*	122	*83.0*	201	*73.1*
98	139	*72.4*	108	*69.2*	144	*92.3*	117	*80.6*	214	*67.3*
99	141	*73.4*	102	*68.9*	140	*94.6*	106	*75.7*	198	*70.7*
100	152	*79.6*	105	*78.9*	138	*103.8*	112	*81.2*	191	*72.2*
101	136	*67.3*	108	*73.3*	148	*101.4*	124	*83.8*	206	*71.8*
102	129	*64.8*	104	*72.2*	138	*95.8*	115	*83.3*	213	*64.8*
104	121	*65.4*	102	*69.4*	126	*85.7*	108	*84.9*	188	*67.0*
106	126	*64.9*	110	*73.8*	136	*91.3*	114	*83.8*	212	*64.2*
109	136	*72.7*	107	*70.4*	140	*92.1*	104	*74.3*	194	*72.2*
113	136	*71.2*	108	*73.0*	132	*89.2*	108	*81.8*	198	*66.7*
114	136	*68.0*	114	*76.0*	135	*90.0*	121	*89.6*	195	*69.2*
116	147	*74.6*	102	*68.9*	143	*96.6*	108	*74.8*	207	*69.1*
117	137	*69.2*	107	*70.9*	138	*91.4*	109	*79.0*	201	*68.6*
120	141	*75.0*	104	*67.5*	131	*85.1*	112	*84.7*	198	*66.2*
128	133	*67.2*	108	*72.5*	141	*94.6*	113	*80.1*	202	*69.8*
131	135	*70.3*	104	*69.3*	140	*93.3*	118	*84.3*	198	*70.7*
133	142	*74.0*	108	*73.0*	144	*97.3*	102	*70.8*	193	*74.6*
134	128	*68.4*	104	*72.2*	133	*92.4*	108	*81.2*	198	*67.2*
146	137	*72.9*	104	*70.3*	150	*101.4*	108	*72.0*	207	*72.5*
151	114	*61.3*	107	*71.3*	143	*95.3*	111	*77.6*	...	....
158	145	*75.9*	111	*72.5*	145	*94.8*	117	*80.6*	...	....
161	129	*67.2*	106	*69.3*	145	*94.8*	115	*79.3*	...	....
164	143	*73.0*	104	*67.1*	143	*92.2*	115	*80.4*	...	....
167	131	*67.5*	108	*73.0*	144	*97.3*	121	*84.0*	...	....
171	126	*67.6*	107	*75.9*	144	*102.1*	111	*77.1*	...	....
173	127	*66.5*	98	*73.1*	134	*100.0*	109	*81.3*	...	....
175	136	*75.4*	108	*73.5*	141	*95.9*	106	*74.5*	...	....
178	138	*70.0*	100	*65.4*	148	*96.7*	115	*77.7*	...	....
179	129	*68.9*	100	*69.0*	139	*95.2*	112	*80.6*	...	....
186	134	*68.0*	103	*68.2*	154	*102.0*	120	*77.9*	...	....
187	129	*69.3*	103	*67.8*	142	*93.4*	117	*81.7*	...	....
188	137	*74.4*	94	*63.1*	147	*98.6*	116	*78.8*	...	....
189	138	*72.2*	101	*67.8*	145	*97.3*	112	*77.2*	...	....
190	124	*66.0*	102	*69.9*	142	*97.3*	107	*75.4*	...	....
191	135	*71.0*	103	*68.7*	138	*92.0*	110	*79.7*	...	....

INDIVIDUAL MEASUREMENTS ON THE LIVING—*Continued*

Number	Head height	Head-length index	Min. frontal diam.	Fronto-parietal index	Max. bizyg. diam.	Cephalo-facial index	Bigon. diam.	Gonio-zyg. index	Menton-crinion	Total facial index
Strong—*Continued*										
192	129	*66.2*	101	*67.8*	148	*99.3*	128	*86.5*	...	....
193	134	*67.3*	108	*70.6*	150	*98.0*	115	*76.7*	...	....
196	130	*69.9*	100	*69.4*	138	*95.8*	109	*79.0*	...	....
207	128	*66.7*	101	*69.2*	140	*95.9*	110	*77.8*	...	....
208	130	*65.0*	111	*73.0*	144	*94.7*	122	*84.7*	...	....
210	129	*68.6*	104	*71.2*	134	*91.8*	104	*77.6*	...	....
211	135	*70.3*	108	*79.4*	146	*107.4*	120	*82.2*	...	....
215	133	*61.1*	108	*70.1*	151	*98.0*	122	*80.8*	...	....
216	139	*69.8*	103	*68.2*	145	*96.0*	119	*82.1*	...	....
217	127	*65.5*	110	*70.5*	148	*94.9*	113	*76.4*	...	....
Lee										
10	...	....	...	....	146	*94.8*	...	....	...	....
40	...	....	...	....	135	*92.5*	...	....	...	....
47	...	....	...	....	137	*99.3*	...	....	...	....
51	...	....	...	....	134	*91.2*	...	....	...	....
52	...	....	...	....	142	*95.3*	...	....	...	....
53	...	....	...	....	141	*92.8*	...	....	...	....
54	...	....	...	....	147	*98.6*	...	....	...	....
55	...	....	...	....	147	*98.0*	...	....	...	....
59	...	....	...	....	149	*96.8*	...	....	...	....
Sornberger										
1	...	....	...	....	145	*98.0*	...	....	...	....
3	...	....	...	....	143	*98.6*	...	....	...	....
6	...	....	...	....	156	*94.5*	...	....	...	....
8	...	....	...	....	145	*99.3*	...	....	...	....
14	...	....	...	....	137	*95.8*	...	....	...	....
17	...	....	...	....	154	*92.5*	...	....	...	....
18	...	....	...	....	155	*92.3*	...	....	...	....
19	...	....	...	....	146	*89.0*	...	....	...	....
20	...	....	...	....	148	*93.7*	...	....	...	....
21	...	....	...	....	154	*98.7*	...	....	...	....
22	...	....	...	....	149	*99.3*	...	....	...	....
23	...	....	...	....	147	*95.4*	...	....	...	....
25	...	....	...	....	144	*96.0*	...	....	...	....
27	...	....	...	....	143	*95.3*	...	....	...	....
29	...	....	...	....	139	*86.2*	...	....	...	....
30	...	....	...	....	138	*90.8*	...	....	...	....
32	...	....	...	....	144	*91.7*	...	....	...	....
Pittard (1901)										
1	141	*72.3*	109	*74.6*	147	*100.7*	...	....	...	....
2	144	*72.7*	112	*72.6*	145	*94.1*	...	....	...	....
3	145	*72.5*	118	*80.8*	146	*100.0*	...	....	...	....
4	139	*70.6*	115	*78.8*	149	*102.0*	...	....	...	....
5	142	*71.7*	120	*82.2*	142	*97.3*	...	....	...	....
6	149	*76.4*	112	*74.7*	146	*97.3*	...	....	...	....
7	141	*74.6*	121	*80.7*	140	*93.3*	...	....	...	....
8	139	*73.9*	119	*79.9*	142	*95.3*	...	....	...	....

INDIVIDUAL MEASUREMENTS ON THE LIVING—*Continued*

Number	Head height	Head-length index	Min. frontal diam.	Fronto-parietal index	Max. bizyg. diam.	Cephalo-facial index	Bigon. diam.	Gonio-zyg. index	Menton-crinion	Total facial index
Virchow (1880)										
..	123	*61.8*	...	....	147	*98.7*	116	*78.9*	194	*75.8*
..	124	*66.0*	...	....	141	*96.6*	123	*87.2*	198	*71.2*
..	121	*59.0*	...	....	152	*100.0*	136	*89.5*	191	*79.6*
					Indian: Male					
Strong										
1	123	*65.4*	114	*79.2*	148	*102.8*	120	*81.1*	188	*78.7*
2	123	*64.7*	106	*72.6*	146	*100.0*	114	*78.1*	194	*75.2*
3	130	*69.2*	108	*73.0*	142	*95.9*	103	*72.5*	184	*77.2*
4	133	*67.8*	104	*70.3*	134	*90.5*	112	*83.6*	180	*74.4*
32	109	*60.6*	102	*74.4*	134	*97.8*	106	*79.1*	193	*69.4*
33	116	*63.0*	112	*85.5*	140	*106.9*	96	*67.8*	199	*70.4*
34	...	....	113	*80.7*	141	*100.7*	119	*84.4*	194	*72.7*
39	123	*64.4*	110	*71.4*	144	*93.5*	104	*72.2*	185	*77.8*
40	130	*69.5*	109	*75.2*	137	*94.5*	112	*81.8*	178	*77.0*
42	136	*67.7*	106	*77.4*	150	*109.5*	108	*72.0*	189	*79.4*
43	115	*59.3*	96	*61.9*	143	*92.2*	108	*74.8*	192	*74.5*
					Eskimo: Female					
Strong										
12	115	*63.2*	103	*76.9*	132	*98.5*	110	*83.3*	184	*71.7*
14	120	*65.2*	101	*70.6*	134	*93.7*	112	*83.6*	190	*70.5*
16	116	*63.0*	104	*77.0*	138	*102.2*	108	*78.3*	178	*77.5*
22	140	*75.3*	...	....	132	*88.0*	102	*77.3*	186	*71.0*
52	124	*68.1*	107	*73.3*	133	*91.1*	108	*81.2*	174	*76.4*
54	128	*66.7*	106	*75.7*	138	*97.8*	104	*75.4*	198	*69.7*
55	138	*75.0*	104	*80.0*	140	*107.7*	110	*78.6*	183	*76.5*
56	138	*73.4*	102	*71.8*	130	*91.5*	110	*83.8*	188	*69.1*
57	119	*64.0*	112	*77.7*	142	*98.6*	110	*76.8*	186	*76.3*
59	112	*62.2*	103	*76.9*	122	*91.0*	106	*86.9*	187	*65.2*
60	100	*58.1*	100	*74.6*	126	*94.0*	96	*76.2*	172	*73.2*
61	127	*68.2*	106	*71.6*	132	*89.2*	110	*83.3*	189	*69.8*
62	118	*64.1*	106	*81.5*	123	*94.5*	104	*82.9*	186	*66.1*
63	135	*74.6*	102	*71.8*	130	*91.5*	101	*76.9*	177	*73.4*
64	108	*57.8*	101	*73.2*	134	*97.1*	105	*78.4*	183	*73.2*
65	119	*61.3*	108	*73.0*	134	*90.5*	108	*80.5*	187	*71.6*
66	116	*62.0*	105	*76.6*	138	*100.7*	108	*78.3*	181	*76.2*
67	126	*67.7*	106	*77.9*	140	*102.9*	111	*78.5*	200	*70.0*
68	124	*67.4*	98	*73.0*	129	*96.3*	110	*84.5*	183	*70.5*
70	130	*71.4*	106	*79.1*	133	*99.2*	99	*74.4*	176	*75.6*
71	121	*68.0*	102	*71.3*	130	*90.9*	102	*77.7*	181	*71.8*
72	108	*60.7*	101	*74.8*	134	*99.2*	104	*77.6*	187	*71.6*
76	123	*66.1*	100	*75.8*	136	*103.0*	110	*80.9*	194	*70.8*
88	124	*65.3*	104	*74.3*	134	*95.7*	107	*79.8*	198	*67.6*
90	136	*74.7*	110	*74.1*	132	*89.8*	108	*81.8*	186	*71.1*
91	123	*67.6*	98	*69.0*	125	*88.0*	94	*75.2*	187	*66.7*
92	129	*68.6*	96	*70.1*	133	*97.1*	111	*83.4*	196	*67.0*
93	134	*71.3*	106	*70.7*	137	*91.3*	102	*74.4*	193	*71.8*
94	116	*62.4*	99	*73.3*	131	*97.0*	103	*77.1*	183	*71.8*
95	119	*64.1*	106	*73.6*	132	*91.7*	102	*77.3*	195	*67.0*
96	127	*69.0*	102	*72.8*	127	*90.7*	110	*85.8*	185	*68.6*
97	154	*86.0*	99	*70.7*	112	*80.0*	103	*92.0*	184	*60.7*
110	130	*76.5*	100	*71.4*	121	*85.7*	100	*81.8*	185	*65.6*

INDIVIDUAL MEASUREMENTS ON THE LIVING—*Continued*

Number	Head height	Head-length index	Min. frontal diam.	Fronto-parietal index	Max. bizyg. diam.	Cephalo-facial index	Bigon. diam.	Gonio-zyg. index	Menton-crinion	Total facial index
Strong—*Continued*										
111	113	*62.8*	96	*68.1*	124	*87.9*	102	*81.4*	185	*67.0*
112	130	*73.0*	102	*69.4*	132	*89.8*	110	*82.6*	186	*71.0*
118	140	*74.5*	106	*70.2*	134	*88.7*	110	*82.1*	199	*67.3*
119	116	*65.9*	97	*73.4*	119	*90.2*	95	*79.8*	176	*67.6*
121	128	*67.7*	104	*70.3*	130	*87.8*	113	*86.2*	184	*70.6*
127	129	*73.7*	100	*74.1*	120	*88.9*	94	*78.3*	184	*65.2*
129	128	*68.8*	104	*73.2*	131	*92.2*	107	*80.2*	176	*74.4*
130	133	*70.0*	103	*71.4*	112	*77.8*	110	*98.2*	195	*57.4*
132	127	*67.6*	100	*70.4*	137	*96.5*	104	*75.9*	200	*68.5*
136	142	*75.9*	106	*70.7*	148	*98.7*	114	*77.0*	198	*74.7*
148	139	*74.3*	103	*71.5*	139	*96.5*	113	*81.3*	193	*72.0*
149	136	*70.8*	106	*72.1*	132	*89.8*	104	*78.8*	191	*69.1*
150	132	*73.3*	95	*66.0*	133	*92.4*	103	*77.4*	...	....
152	122	*64.6*	100	*67.1*	141	*94.6*	111	*77.3*	...	....
153	128	*71.5*	98	*68.0*	140	*97.2*	112	*80.0*	...	....
154	137	*79.6*	99	*68.8*	132	*91.7*	108	*81.1*	...	....
159	119	*67.6*	98	*69.0*	131	*92.2*	104	*78.5*	...	....
160	132	*72.9*	101	*70.1*	136	*94.4*	107	*78.7*	...	....
163	135	*72.6*	102	*70.6*	142	*99.3*	116	*81.7*	...	....
165	125	*69.4*	107	*78.1*	134	*97.8*	109	*81.3*	...	....
166	134	*72.8*	104	*71.2*	142	*97.3*	113	*79.6*	...	....
168	125	*65.4*	109	*73.6*	138	*93.2*	104	*75.4*	...	....
169	134	*70.9*	97	*67.8*	136	*95.1*	112	*82.4*	...	....
170	123	*66.8*	98	*70.5*	135	*97.1*	114	*84.4*	...	....
172	128	*66.0*	102	*70.8*	138	*95.8*	110	*79.7*	...	....
174	130	*69.9*	100	*68.0*	133	*90.5*	104	*78.2*	...	....
176	135	*71.4*	100	*66.2*	134	*88.7*	106	*79.1*	...	....
177	119	*64.7*	102	*73.4*	136	*97.8*	109	*80.1*	...	....
180	129	*67.9*	106	*71.6*	143	*96.6*	113	*79.0*	...	....
182	133	*70.0*	109	*76.2*	135	*94.4*	115	*85.2*	...	....
184	133	*68.9*	107	*72.8*	144	*98.0*	121	*84.0*	...	....
185	129	*66.2*	103	*71.0*	142	*97.9*	103	*72.5*	...	....
194	130	*66.3*	105	*72.4*	141	*97.2*	111	*78.0*	...	....
198	130	*67.7*	102	*69.9*	149	*102.0*	114	*76.5*	...	....
199	129	*66.5*	107	*74.6*	142	*100.0*	120	*84.5*	...	....
200	121	*66.5*	98	*69.0*	134	*94.4*	107	*79.8*	...	....
201	120	*65.9*	98	*69.5*	129	*91.5*	100	*77.5*	...	....
202	124	*65.3*	101	*71.6*	114	*80.1*	110	*96.5*	...	....
203	123	*65.8*	102	*70.3*	135	*93.1*	110	*81.5*	...	....
204	120	*67.0*	102	*70.3*	134	*92.4*	108	*80.6*	...	....
206	120	*63.8*	100	*69.4*	138	*95.8*	110	*79.7*	...	....
209	130	*71.0*	101	*68.0*	132	*89.8*	107	*81.1*	...	....
212	125	*63.8*	103	*71.0*	132	*91.0*	106	*80.3*	...	....
213	113	*62.8*	101	*70.1*	130	*90.3*	108	*83.1*	...	....
214	126	*66.7*	101	*67.3*	138	*92.0*	108	*78.3*	...	....
219	119	*64.0*	107	*72.3*	140	*94.6*	110	*78.6*	...	....
Lee										
12	...	....	...	....	134	*90.5*	...	....	...	....
39	...	....	...	....	133	*94.3*	...	....	...	....
41	...	....	...	....	124	*86.1*	...	....	...	....
44	...	....	...	....	135	*93.8*	...	....	...	....

INDIVIDUAL MEASUREMENTS ON THE LIVING—*Continued*

Number	Head height	Head-length index	Min. frontal diam.	Fronto-parietal index	Max. bizyg. diam.	Cephalo-facial index	Bigon. diam.	Gonio-zyg. index	Menton-crinion	Total facial index
Lee—*Continued*										
45	...	....	...	....	128	*89.5*	...	....	...	....
46	...	....	...	....	126	*88.7*	...	....	...	....
48	...	....	...	....	133	*93.7*	...	....	...	....
49	...	....	...	....	131	*88.5*	...	....	...	....
56	...	....	...	....	142	*93.4*	...	....	...	....
57	...	....	...	....	139	*94.6*	...	....	...	....
Sornberger										
5	...	....	...	....	138	*110.4*	...	....	...	....
9	...	....	...	....	144	*90.0*	...	....	...	....
24	...	....	...	....	141	.....	...	....	...	....
26	...	....	...	....	140	*97.2*	...	....	...	....
Pittard (1901)										
1	129	*69.4*	115	*79.9*	134	*93.1*	...	....	...	....
2	137	*69.9*	113	*76.9*	141	*95.9*	...	....	...	....
4	133	*70.0*	115	*80.3*	137	*96.5*	...	....	...	....
6	132	*67.0*	111	*77.1*	137	*95.1*	...	....	...	....
7	140	*73.3*	112	*78.3*	136	*95.1*	...	....	...	....
8	136	*69.4*	110	*75.9*	141	*97.2*	...	....	...	....
Virchow (1880)										
...	121	*63.0*	...	....	137	*104.6*	117.0	*85.4*	192	*71.4*
...	113	*59.8*	...	....	132	*92.3*	116.5	*88.2*	177	*74.6*
				Indian: Female						
Strong										
5	114	*63.3*	106	*73.9*	140	*97.9*	104	*74.2*	177	*79.1*
6	122	*67.8*	102	*75.0*	130	*95.6*	100	*74.5*	170	*76.5*
7	119	*65.4*	106	*73.9*	130	*91.5*	100	*74.5*	172	*75.6*
8	132	*71.7*	104	*72.2*	140	*97.2*	104	*73.6*	174	*80.4*
37	113	*60.1*	103	*69.6*	128	*86.5*	100	*78.1*	177	*72.3*
38	119	*63.3*	102	*69.4*	128	*87.1*	100	*78.1*	177	*72.3*
41	111	*59.4*	109	*73.2*	144	*96.6*	109	*75.0*	171	*84.2*

APPENDIX C3

Individual Measurements on the Living

Number	Menton-nasion‡	Forehead height‡	Nose height‡	Nose breadth	Nasal index	Ear length	Ear breadth	Ear index	Skin color	Teeth missing	Palatal raphe
Strong					*Eskimo: Male*						
9	...	71	59	40	*67.8*	68	38	*55.9*	11	0	+
10	...	75	60	32	*53.3*	74	40	*54.0*	15	3	mkd.
13	...	77	64	41	*64.1*	69	35	*50.7*	9	3	not mkd.
19	...	72	54	35	*64.8*	72	41	*56.9*	..	?	—
21	...	85	54	40	*74.1*	71	30	*42.2*	..	1	?
26	...	68	54	38	*70.4*	70	27	*38.6*	..	?	?
28	...	78	56	41	*73.2*	72	33	*45.8*	..	?	?
29	...	75	45	36	*80.0*	64	31	*48.4*	..	?	?
30	...	64	52	32	*61.5*	56	30	*53.6*	..	?	?
73	...	69	56	40	*71.4*	76	40	*52.6*	12	8	+
77	...	74	63	41	*65.1*	74	34	*45.9*	12	10	+
79	...	88	66	42	*63.6*	76	45	*59.2*	11	17	+
80	...	65	56	41	*73.2*	77	36	*46.8*	12	16	+
85	...	80	59	34	*57.6*	76	37	*48.7*	11	5	+
98	...	84	71	39	*54.9*	74	35	*47.3*	10	3	+
99	...	70	55	34	*61.8*	76	35	*46.0*	9	9	+
100	...	78	52	37	*71.2*	74	41	*55.4*	11	8	—
101	...	87	58	41	*70.7*	69	40	*58.0*	10	3	+
102	...	72	73	39	*53.4*	74	40	*54.0*	11	11	—
104	...	68	57	36	*63.2*	64	39	*60.9*	10	2	—
106	...	85	58	35	*60.3*	65	40	*61.5*	10	1	+
109	...	56	69	41	*59.4*	72	36	*50.0*	10	5	—
113	...	72	60	37	*61.7*	70	41	*58.6*	9	10	+
114	...	76	51	43	*84.3*	65	38	*58.5*	12	1	+
116	...	72	67	39	*58.2*	80	40	*50.0*	12	32	—
117	...	76	61	35	*57.4*	67	35	*52.2*	9	7	+
120	...	69	65	37	*56.9*	64	38	*59.4*	14	3	+
128	...	72	54	34	*63.0*	69	34	*49.3*	10	0	+
131	...	82	54	34	*63.0*	63	34	*54.0*	11	0	—
133	...	85	51	39	*76.5*	66	43	*65.2*	10	1	—
134	...	85	52	36	*69.2*	68	35	*51.5*	9	0	—
146	..	84	57	40	*70.2*	74	40	*54.0*	10	1	—
151	125	74	53	37	*69.8*	60	33	*55.0*	12	2	pres.
158	124	73	55	38	*69.1*	70	39	*55.7*	12	1	—
161	129	81	55	36	*65.4*	63	36	*57.1*	14	1	tr.
164	126	72	58	41	*70.7*	70	43	*61.4*	9	1	+
167	136	79	59	37	*62.7*	77	38	*49.4*	9	9	—
171	129	84	55	34	*61.8*	84	45	*53.6*	10–12	2	—
173	148	82	65	39	*60.0*	81	37	*45.7*	8	12	+
175	127	77	56	32	*57.1*	68	40	*58.8*	10	1	—
178	135	75	57	42	*73.7*	83	45	*54.0*	9	1	tr.
179	128	68	52	34	*65.4*	69	35	*50.7*	9	14	—
186	135	88	56	40	*71.4*	77	40	*51.9*	9	10	+
187	132	77	57	36	*63.2*	70	36	*51.4*	11	12	+
188	130	83	55	37	*67.3*	65	39	*60.0*	8	3	—
189	129	73	55	39	*70.9*	72	35	*48.6*	9	1	+

‡The measurements involving the landmark nasion should be used with care.

INDIVIDUAL MEASUREMENTS ON THE LIVING—*Continued*

Number	Menton-nasion‡	Forehead height‡	Nose height‡	Nose breadth	Nasal index	Ear length	Ear breadth	Ear index	Skin color	Teeth missing	Palatal raphe
Strong—*Continued*											
190	122	86	54	43	*79.6*	80	43	*53.8*	3	1	tr.
191	123	97	52	36	*69.2*	67	34	*50.7*	10	5	+
192	132	79	58	37	*63.8*	73	38	*52.0*	9	0	–
193	138	81	64	45	*70.3*	77	37	*48.0*	9	8	–
196	135	67	56	35	*62.5*	70	38	*54.3*	10	4	–
207	126	72	59	38	*64.4*	68	35	*51.5*	11	0	–
208	135	91	55	40	*72.7*	67	32	*47.8*	10	0	–
210	126	76	54	35	*64.8*	70	39	*55.7*	10	1	mkd.
211	133	75	51	43	*84.3*	74	41	*55.4*	10	1	–
215	131	93	48	38	*79.2*	66	38	*57.6*	12	4	faint
216	131	84	53	40	*75.5*	67	36	*53.7*	11	2	–
217	116	84	50	40	*80.0*	74	39	*52.7*	13	1	–
Lee											
10	119	..	55	41	*74.5*	..	..	....	..	..	?
40	129	..	54	37	*68.5*	..	..	....	..	..	?
47	118	..	48	37	*77.1*	..	..	....	..	..	?
51	128	..	56	35	*62.5*	..	..	....	..	..	?
52	122	..	53	38	*71.7*	..	..	....	..	..	?
53	128	..	52	36	*69.2*	..	..	....	..	..	?
54	120	..	51	39	*76.5*	..	..	....	..	..	?
55	119	..	46	41	*89.1*	..	..	....	..	..	?
59	124	..	50	38	*76.0*	..	..	....	..	..	?
Sornberger											
1	131	80	59	40	*67.8*	..	..	....	..	..	?
3	124	71	54	44	*81.5*	..	..	....	..	..	?
6	124	70	57	37	*64.9*	..	..	....	..	..	?
8	115	82	49	41	*83.7*	..	..	....	..	..	?
14	120	61	49	35	*71.4*	..	..	....	..	..	?
17	126	91	52	42	*80.8*	..	..	....	..	..	?
18	120	81	53	41	*77.4*	..	..	....	..	..	?
19	118	63	48	35	*72.9*	..	..	....	..	..	?
20	115	79	49	43	*87.8*	..	..	....	..	..	?
21	119	84	51	37	*72.5*	..	..	....	..	..	?
22	115	78	52	37	*71.2*	..	..	....	..	..	?
23	118	87	44	40	*90.9*	..	..	....	..	..	?
25	124	72	55	42	*76.4*	..	..	....	..	..	?
27	118	69	54	37	*68.5*	..	..	....	..	..	?
29	117	72	50	35	*70.0*	..	..	....	..	..	?
30	115	56	48	37	*77.1*	..	..	....	..	..	?
32	110	67	44	34	*77.3*	..	..	....	..	..	?
Pittard (1901)											
1	...	..	51	39	*76.5*	75	41	*54.7*	..	..	?
2	...	..	54	41	*75.9*	70	37	*52.8*	..	..	?
3	...	..	53	36	*67.9*	71	43	*60.6*	..	..	?
4	...	..	51	40	*78.4*	65	36	*55.4*	..	..	?
5	...	..	53	37	*69.8*	70	38	*54.3*	..	..	?
6	...	..	51	35	*68.6*	60	38	*63.3*	..	..	?
7	...	..	50	36	*72.0*	65	37	*56.9*	..	..	?
8	...	..	52	36	*69.2*	66	39	*59.1*	..	..	?

‡ The measurements involving the landmark nasion should be used with care.

INDIVIDUAL MEASUREMENTS ON THE LIVING—*Continued*

Number	Menton-nasion‡	Forehead height‡	Nose height‡	Nose breadth	Nasal index	Ear length	Ear breadth	Ear index	Skin color	Teeth missing	Palatal raphe
Virchow (1880)											
...	125	69	59	37	*62.7*	62	..	....	..	..	?
...	131	67	57	38	*66.6*	65	..	....	..	..	?
...	127	64	60	42	*70.0*	70	..	....	..	..	?
Strong					*Indian: Male*						
1	...	70	54	43	*79.6*	68	35	*51.5*	17	?	?
2	...	66	63	42	*66.7*	67	34	*50.7*	14	0	+
3	...	64	54	45	*83.3*	60	35	*58.3*	15	0	tr.
4	...	58	52	38	*73.1*	65	35	*53.7*	15	0	–
32	...	71	59	40	*67.8*	67	33	*49.2*	13	0	mkd.
33	...	75	53	..	....	70	37	*52.8*	13	0	mkd.
34	...	78	58	37	*63.8*	71	39	*54.9*	..	?	?
39	...	69	58	39	*67.2*	67	33	*49.2*	10	0	–
40	...	57	60	34	*56.7*	61	33	*54.1*	10	0	–
42	...	66	61	42	*68.8*	62	38	*61.3*	13	0	–
43	...	70	58	36	*62.1*	69	39	*56.5*	15	0	tr.
Strong					*Eskimo: Female*						
12	...	75	55	37	*67.3*	62	33	*53.2*	14	?	mkd.
14	...	75	55	36	*65.4*	63	33	*52.4*	11	?	not mkd.
16	...	75	53	36	*67.9*	64	38	*59.4*	13	6	mkd.
22	...	72	44	33	*75.0*	51	25	*49.0*	..	?	?
52	...	61	57	34	*59.6*	61	33	*54.1*	10	23	?
54	...	66	71	37	*52.1*	74	36	*48.6*	15	9	+
55	...	71	58	38	*65.5*	67	33	*49.2*	12	10	+
56	...	69	59	37	*62.7*	65	35	*53.8*	10	7	+
57	...	66	55	34	*61.8*	65	36	*55.2*	13	4	+
59	...	81	50	31	*62.0*	56	32	*57.1*	11	?	–
60	...	60	59	36	*61.0*	71	36	*50.7*	12	13	–
61	...	79	61	29	*47.5*	66	35	*53.0*	13	6	–
62	...	72	55	37	*67.3*	65	35	*53.8*	13	9	+
63	...	57	62	37	*59.7*	64	34	*53.1*	13	22	+
64	...	73	61	31	*50.8*	63	37	*58.7*	12	20	–
65	...	70	59	35	*59.3*	73	36	*49.3*	10	9	+
66	...	70	55	37	*67.3*	63	34	*54.0*	11	0	+
67	...	88	62	35	*56.4*	67	32	*47.8*	11	3	+
68	...	74	55	29	*52.7*	69	39	*56.5*	12	6	–
70	...	69	59	31	*52.5*	61	34	*55.7*	10	0	+
71	...	68	56	33	*58.9*	68	32	*47.0*	10	18	+
72	...	73	57	34	*59.6*	64	36	*56.2*	12	20	+
76	...	76	52	37	*71.2*	73	34	*46.4*	10	19	+
88	...	56	59	34	*57.6*	68	34	*50.0*	12	8	–
90	...	69	57	34	*59.6*	51	36	*70.6*	11	4	–
91	...	62	59	32	*54.2*	74	40	*54.0*	14	24	+
92	...	84	53	38	*71.7*	77	35	*45.4*	12	25	+
93	...	79	54	31	*57.4*	74	41	*55.4*	11	22	+
94	...	64	53	33	*62.3*	64	35	*54.7*	10	2	+
95	...	82	61	33	*54.1*	54	31	*57.4*	12	0	+
96	...	69	54	33	*61.1*	58	33	*56.9*	10	8	+
97	...	64	55	35	*63.6*	55	32	*58.2*	10	1	–

‡ The measurements involving the landmark nasion should be used with care.

INDIVIDUAL MEASUREMENTS ON THE LIVING—*Continued*

Number	Menton-nasion‡	Forehead height‡	Nose height‡	Nose breadth	Nasal index	Ear length	Ear breadth	Ear index	Skin color	Teeth missing	Palatal raphe
Strong—*Continued*											
110	...	68	55	32	*58.2*	61	32	*52.4*	12	?	?
111	...	63	55	34	*61.8*	67	38	*56.7*	14	32	−
112	...	65	58	30	*51.7*	66	34	*51.5*	10	1	+
118	...	84	60	35	*58.3*	67	36	*53.7*	13	4	−
119	...	65	51	30	*58.8*	57	33	*57.9*	12	2	+
121	...	67	56	31	*55.4*	82	44	*53.5*	10	3	+
127	...	73	54	30	*55.6*	60	34	*56.7*	10	4	+
129	...	65	47	31	*66.0*	62	37	*59.7*	10	2	−
130	...	76	52	34	*65.4*	70	36	*51.4*	10	20	+
132	...	84	53	34	*64.2*	63	38	*60.3*	12	2	−
136	...	83	51	35	*68.6*	79	46	*58.2*	10	0	−
148	...	72	60	32	*53.3*	66	39	*59.1*	9	10	+
149	...	84	47	37	*78.7*	65	37	*56.9*	10	4	+
150	109	74	51	29	*56.9*	60	36	*60.0*	11	0	+
152	118	82	50	33	*66.0*	67	38	*56.7*	10	6	+
153	126	65	54	29	*53.7*	60	30	*50.0*	10	0	+
154	128	68	52	28	*53.8*	66	31	*47.0*	10	?†	−
159	123	81	51	35	*68.6*	74	40	*54.0*	10	0	−
160	112	75	52	32	*61.5*	62	33	*53.2*	10	4	mkd.
163	120	78	51	32	*62.7*	73	30	*41.1*	10	14	+
165	111	70	51	32	*62.7*	76	38	*50.0*	10	3	−
166	125	68	51	33	*64.7*	67	33	*49.2*	11	1	mkd.
168	126	81	56	34	*60.7*	64	35	*54.7*	12	1	+
169	132	78	58	34	*58.6*	73	34	*46.6*	10	0	−
170	124	69	61	38	*62.3*	74	41	*55.4*	11	32	+
172	134	75	56	33	*58.9*	71	36	*50.7*	10	5	+
174	126	79	55	33	*60.0*	67	35	*52.2*	10	16	−
176	140	82	60	31	*51.7*	63	33	*52.4*	10	17	+
177	124	81	56	35	*62.5*	64	31	*48.4*	11	8	−
180	123	86	55	36	*65.4*	77	37	*48.0*	10	13	+
182	130	72	51	39	*76.5*	68	39	*57.2*	11	9	−
184	132	83	56	42	*75.0*	67	43	*64.2*	12	3	mkd.
185	125	80	50	39	*78.0*	82	42	*51.2*	10	13	+
194	129	73	56	35	*62.5*	68	39	*57.4*	10	17	tr.
198	129	80	60	38	*63.3*	77	47	*61.0*	12	12	+
199	120	73	53	41	*77.4*	70	34	*48.6*	11	6	tr.
200	115	68	47	31	*66.0*	63	34	*54.0*	8	0	−
201	118	76	53	36	*67.9*	70	34	*48.6*	10	1	+
202	134	75	59	33	*55.9*	70	37	*52.8*	11	8	+
203	124	77	54	35	*64.8*	65	33	*50.6*	10	2	tr.
204	115	70	52	35	*67.3*	65	31	*47.7*	11	1	−
206	123	81	56	35	*62.5*	68	32	*47.0*	10	0	−
209	119	75	48	35	*72.9*	57	36	*63.2*	12	4	tr.
212	125	76	55	37	*67.3*	64	33	*51.6*	10	?	mkd.
213	122	72	50	36	*72.0*	66	34	*51.5*	10	4	+
214	132	82	50	34	*68.0*	68	35	*51.5*	10	0	+
219	105	90	47	35	*74.5*	70	36	*51.4*	10	3	+

‡ The measurements involving the landmark nasion should be used with care.
† Supernumerary teeth.

INDIVIDUAL MEASUREMENTS ON THE LIVING—*Continued*

Number	Menton-nasion‡	Forehead height‡	Nose height‡	Nose breadth	Nasal index	Ear length	Ear breadth	Ear index	Skin color	Teeth missing	Palatal raphe
Lee											
12	113	..	51	37	*72.5*	..	..	....	..	..	?
39	117	..	49	33	*67.3*	..	..	....	..	..	?
41	111	..	49	38	*77.6*	..	..	....	..	..	?
44	111	..	43	34	*79.1*	..	..	....	..	..	?
45	112	..	46	36	*78.3*	..	..	....	..	..	?
46	116	..	46	33	*71.7*	..	..	....	..	..	?
48	111	..	51	33	*64.7*	..	..	....	..	..	?
49	115	..	46	30	*65.2*	..	..	....	..	..	?
56	115	..	47	36	*76.6*	..	..	....	..	..	?
57	117	..	52	37	*71.2*	..	..	....	..	..	?
Sornberger											
5	106	51	46	40	*87.0*	..	..	....	..	..	?
9	116	76	48	39	*81.2*	..	..	....	..	..	?
24	99	79	48	33	*68.8*	..	..	....	..	..	?
26	108	74	47	34	*72.3*	..	..	....	..	..	?
Pittard (1901)											
1	...	..	44	32	*72.7*	63	35	*55.6*	..	..	?
2	...	..	51	36	*70.6*	63	35	*55.6*	..	..	?
4	...	..	47	37	*78.7*	62	34	*54.8*	..	..	?
6	...	..	52	38	*73.1*	68	38	*55.9*	..	..	?
7	...	..	45	32	*71.1*	60	39	*65.0*	..	..	?
8	...	..	50	36	*72.0*	71	36	*50.7*	..	..	?
Virchow (1880)											
...	121	71	53	32	*60.3*	60	..	....	..	..	?
...	117	60	51	35	*68.6*	69	..	....	..	..	?
Strong					*Indian: Female*						
5	...	64	57	39	*68.4*	..	..	....	17	?	?
6	...	66	59	44	*74.6*	..	..	....	13	0	—
7	...	60	58	44	*75.9*	..	..	....	16	?	?
8	...	68	59	39	*66.1*	..	..	....	15	?	?
37	...	68	53	36	*67.9*	65	32	*49.2*	12	0	—
38	...	69	50	33	*66.0*	66	35	*53.0*	10	0	—
41	...	55	59	36	*61.0*	58	32	*55.2*	12	0	—

‡ The measurements involving the landmark nasion should be used with care.

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INDEX

Admixture, Eskimos with Whites, 72–75, 77, 80, 84; Eskimos with Indians, 16; Indians with Whites, 15, 16
Age, distribution of, in series of living, 81, 82, 140–144; in series of skulls, 31, 126–128
Alveolar arch, breadth of, 29, 30, 38–41, 43, 132–134; index, 38–41, 43, 132–134; length of, 29, 30, 38–41, 43, 132–134
Alveolar point, definition of, 30
Alveolar point-nasion height, 29, 30, 34–36, 41, 43, 129–131
Antero-posterior maximum diameter of skull, 28–33, 41, 43, 126–128
Anthropometry, instruction in, 12, 25, 76
Antiquity of Eskimos in Labrador, 19
Arthritis, hypertrophic, 66
Auditory meatus, external, 45, 46

Barren Ground Band, measuring members of, 76; origin and history of, 16
Basion-alveolar point diameter, 29, 30, 35–37, 42, 43, 129–131
Basion-bregma height, 29, 30, 32–34, 41–43, 126–128
Basion-nasion diameter, 29, 30, 35–37, 41–43, 129–131
Benches, height of, for obtaining sitting height, 86, 87
Bessels, Emil, 11, 25, 27, 28
Bigonial diameter in living, 99, 114, 116, 145–149
Bird, Junius, 19
Birket-Smith, Kaj, 19, 69, 98, 103, 116, 117
Birthplace of subjects measured, 82
Bizygomatic maximum diameter, in living, 97, 98, 114–116, 118, 145–149; on skull, 28–30, 35, 36, 42, 43, 129–131
Boas, Franz, 10, 80, 81, 85, 89, 90, 92, 97, 98, 103, 117, 118
Von Bonin, Gerhardt, and Morant, G. M., 120
Breadth-height index on skull, 32, 33, 41, 43, 126–128

Caribou Eskimo, theories concerning, 19–21
Cephalic index, 90–92, 115–118, 140–144; relationship to cranial index, 91, 92, 121
Cephalo-facial index, 98, 99, 115, 116, 118, 145–149
Chipewyans, measurements on living, 23, 24, 84–110, 117, 118, 120
Chippewa, measurements on living, 93–96, 101, 102, 104, 108–110
Cilley, J. P., Jr., 11
Coefficient of racial likeness, 118, 120, 122
Collins, H. B., Jr., 14, 21–24, 66, 69, 113, 122; and Stewart, T. D., 64, 93–96, 101, 102, 104, 108–110
Coon, C. S., 111
Cranial contours, 44, 46–48
Cranial index, 29, 30, 32–34, 41, 43, 91
Cranial module, 32–34, 43, 126–128
Cree, measurements on living, 23, 24, 84–110, 117, 118, 120
Cultural relationships of Labrador Eskimo, 17
Culture, see Dorset, Thule, Stone

Davis Inlet Band, measuring members of, 76; origin and history of, 16
Definition, of alveolar point, 30; of inferior nasal landmark, 30, 31; of median orbital landmark, 31, 37
Delabarre, E. B., 73
Deniker, J., 91
Dental caries, 14, 113
Diameter, see under names
Diet, effect on Eskimos of change in, 14, 15, 121, 122
Dorset culture, 18, 21, 22, 122
Duckworth, W. L. H., 10, 80–82, 85–110, 127, 128, 130, 131, 133, 134

Ear, breadth of, 109, 110, 114, 118, 150–154; index, 110, 118, 150–154; length of, 108, 109, 114, 118, 150–154
Ear exostosis, absence of, 46
Epidemics, 72
Error, due to sexing, 54, 67; personal, 26–31, 54, 78–83, 89

Facial index, total, on skull, 35, 36, 43, 129–131; upper, on skull, 35, 36, 41, 43, 129–131
Femur, dimensions of, 57–59, 137, 138
Field, Henry, 76; Stanley, 12
Field Museum, 9, 12, 78, 126–139
Fischer-Møller, K., 22, 25, 32, 33, 35–39, 52–54, 56, 57, 67, 68
Food, European, use of among Eskimos, 13
Forehead height, 104, 114, 150–154
Formula, of Pearson, for reconstructing stature, 62–64; of Stevenson, for comparing non-metrical data, 48, 54
Frontal minimum diameter, in living, 95, 96, 114, 115, 145–149; on skull, 29, 34–36, 43, 129–131

Fronto-parietal index, 96, 97, 145–149
Fürst, C. M., 52
Fürst, C. M. and Hansen, Fr. C. C., 11, 27, 28, 42

Goldstein, M. S., 113
Gonio-zygomatic index in living, 100, 145–149
Gower, C. D., 31
Grant, J. C. B., 84–110, 117, 118, 121
Greenland, comparison of cranial series from, 42; measurements on living Eskimos from, 91, 92, 99, 100, 116; measurements on skulls from, 28, 30, 32–41

Hallowell, A. I., 10, 15, 80, 84–108, 111
Hansen, Søren, 67, 68, 91, 92
Hantzsch collection, Dresden, 11
Hawkes, E. W., 70, 71
Hayes collection, Washington, 25, 27
Head, breadth of in living, 89, 114–116, 118, 140–144; height of in living, 93–95, 114, 145–149; length of in living, 87, 88, 114–116, 118, 140–144
Height-length index in living, 95, 145–149
Hettasch, Paul, 12
Hickson, Thomas, 73
Hooton, E. A., 11, 44, 52, 76
Howells, W. W., 93, 106, 115
Hrdlička, A., 22, 25–33, 35–39, 44, 53, 57, 62–64, 76, 85, 87, 91, 93–96, 99–102, 104–109, 110, 116
Humerus, dimensions of, 54, 55, 135
Hutton, S. K., 11, 14, 15, 53, 66, 71, 75

Index, see under names
Instruments, anthropometrical, 41, 57, 76

Jenness, D., 18, 20, 21, 99, 100, 116, 120, 121
Jugular fossae, 49

Kohlmeister, B. and Koch, G., 15
Krogman, W. M., 122

Landmarks, definition of, 94, 119; interpretation of, 30, 31, 78
Langford, E. K., 12, 76, 78–80, 89
Larsen, Helge, 69
Lateral maximum diameter on skull, 28–30, 32, 33, 41, 43, 126–128
Lee, Leslie A., 11, 85–110, 141, 143, 146, 148, 149, 151, 154
Length-height index on skull, 32, 33, 41, 43, 126–128
Little John, dwarf of Okak, 53
Living, circumstances surrounding collection of data on, 76, 77; deficiencies of data on, 119
Long bones, inter-relationships of, 61, 62, 136; see under individual bones
Longevity, 75
Long Shan, 16

MacGregor, Sir William, 73–75
MacMillan, Donald B., 12
Mantish, 16
Martin, C. A., 74
Mathiassen, Therkel, 17, 18, 21, 23
Mean height index, 32–34, 41, 43, 126–128
Mean sigma, 106, 115
Menton-crinion diameter, 100–102, 114, 145–149
Menton-nasion diameter, in living, 103, 104, 114, 115, 118, 150–154; on skull, 29, 34–36, 43, 129–131
Methods of measuring, 25, 26, 28, 30, 31, 47, 57, 93, 94
Michelson, Truman, 79, 80, 89
Microcephaly, 52, 53
Mixed-bloods, see Admixture
Module, cranial, 32–34, 43, 126–128
Montagnais-Naskapi, history of, 23
Moore, R. D., 63, 93–96, 99–102, 104, 108–110
Morant, G. M., 26, 30, 42, 122
Moravian missionaries, 12, 13
Moravian missions, history of, 70, 71

Nasal breadth, in living, 106, 107, 114–116, 118, 150–154; on skull, 29, 30, 37–39, 41, 43, 132–134
Nasal height, in living, 105, 106, 114–116, 118, 150–154; on skull, 29, 30, 37–39, 41, 43, 132–134
Nasal index, in living, 107, 108, 115, 116, 118, 150–154; on skull, 38–40, 41, 43, 132–134
Nasion, difficulty in locating, 77, 78, 101–106

Oetteking, Bruno, 10, 11, 44, 46, 127, 128, 130, 131–139
Old grave series, measurements on, 31–42
Old Igloos, measurements on skulls of, 32–41; opinions regarding, 22
Orbit, inclination of, 47
Orbital breadth, mean, 29, 30, 37–39, 41, 43, 132–134
Orbital height, mean, 29, 30, 37–39, 41, 43, 132–134
Orbital index, mean, 37–39, 41, 43, 132–134
Otis, G. A., 27, 28

Packard, A. S., 73, 75
Palatal raphe, 113, 114
Parietal foramina, 48
Parry, W. E., 67

Pathology, of long bones, 66, 67; of skull, 53
Peabody Museum, Cambridge, 11, 126–139
Pearson, Karl, 26, 62, 84
Pedersen, P. O., 113
Perrett, Walter, 12, 71
Photographs, comments on, 78
Pittard, Eugene, 10, 81, 82, 85–110, 141, 144, 146, 149, 151, 154
Population, records of mission stations on, 71, 72; trend, 72
Poulsen, Knud, 92, 99, 100, 116
Price, Weston A., 14
Problems, 13–15, 77, 78, 83
Pterion, 45

Radius, dimensions of, 56, 136
Rawson, Frederick H., 12
Rawson–MacMillan Subarctic Expedition of Field Museum, 9, 12
Ray, P. H., 69
Recent grave series, measurements on, 42–43
Relations between Labrador Eskimos and Indians, 15
Relationship, between Greenland and Labrador Eskimos, 40, 41, 122; between Old Igloos and Labrador Eskimos, 22, 40, 41, 122; between Thule and Labrador Eskimos, 41, 122; of Eskimos to Indians, 23, 24, 117–120
Relative sitting height, 86, 87, 140–144
Reliability of Strong's measurements, 114, 115
Ridgway, R., 112
Russell, Frank and Huxley, H. M., 11, 29, 31, 35, 41, 52, 54

Schenk, Alexandre, 130, 133
Seltzer, Carl C., 10, 22, 24, 69, 78, 84–86, 88, 89, 91, 92, 103, 115–120
Septal apertures of humerus, 54, 56
Sergi, G., 127, 130, 133
Series, composition of, 9, 77; résumé of conditions affecting, 83
Sex, identification of, 119
Sexing, error due to, 26–28
Shapiro, H. L., 10, 23, 24, 82, 84, 88, 89, 92, 99, 105, 107, 111, 117, 118, 120
Sigma ratio, 115
Sioux, measurements on living, 93–96, 101, 102, 104, 108–110
Sitting height, 85, 86, 114, 140–144
Skeletal collections, deficiencies of, 119
Skin color, 111, 112
Smithsonian Institution, 11, 12
Sornberger, J. D., 11, 85–107, 141, 144, 146, 149, 151, 154
Speck, F. G., 13, 23
Spengel, J. W., 127, 128, 130, 131, 133, 134
Standards for non-metrical observations, 44
Statistical device, Shapiro's, 117
Statistical treatment, explanations of, 26, 84
Stature, of living, 84, 85, 114–116, 118, 140–144; reconstruction of, 62–65, 67–69
Steensby, H. P., 116, 117
Stefansson, V., 78
Stevenson, P. H., 48, 54, 62, 63, 87
Stewart, T. D., 12, 29, 30, 46, 54, 62, 65, 76, 91
Stone culture in Labrador, 18
Strong, W. D., 9, 12, 16, 18, 19, 23, 71, 72, 76–116, 118, 140–154
Struck, Professor, Dresden, 11
Suk, V., 11, 66, 74
Sullivan, L. R., 76, 90
Syphilis, 66

Teeth, 50, 51, 112
Temporal muscles, effect of upon cephalic index, 92, 121
Theories of origin of Eskimos, 19–22
Third trochanter of femur, 57
Thule culture, distribution of, 17
Thule Eskimo, measurements on skulls of, 32–41
Tibia, dimensions of, 57, 60, 139; method of measuring, 57
Tocher, J. F., 67
Torus, mandibular, 52; palatal, 52, 113, 114
Tuberculosis, 67
Tympanic plate, hyperostosis of, 45; perforation of, 49

United States National Museum, 12

Variability in Strong's series, 115, 116
Vertebrae, anomalies of, 65, 66
Virchow, R., 81, 82, 85, 127, 130, 133, 141, 144, 147, 149, 152, 154

Waldman, 12
Western Eskimo, measurements of living, 64, 91, 93–96, 99–102, 104, 108–110, 115, 116
Weyer, E. M., Jr., 111
Wilder, H. H., 76
Wyman, Jeffries, 126

Young, Arminius, 73

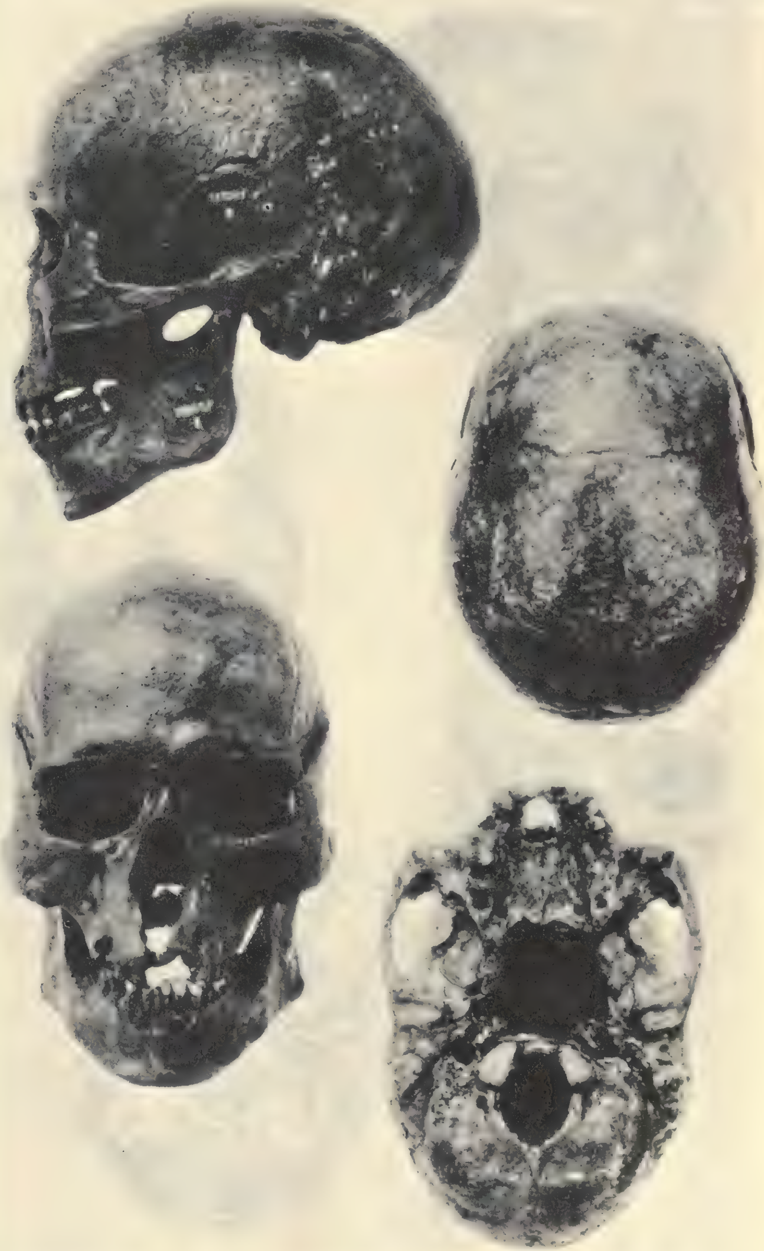
SKULL 192001 (FIELD MUSEUM) ORIENTED IN FRANKFORT POSITION
Old stone grave series; old male

SKULL 192031 (FIELD MUSEUM) ORIENTED IN FRANKFORT POSITION

Old stone grave series; old female

SKULL 192006 (FIELD MUSEUM) ORIENTED IN FRANKFORT POSITION

Recent grave series; male, 69



SKULL 192007 (FIELD MUSEUM) ORIENTED IN FRANKFORT POSITION

Recent grave series; old male. Note pathological changes in maxillae

SKULL 192008 (FIELD MUSEUM) ORIENTED IN FRANKFORT POSITION

Recent grave series; male, 73

SKULL 192009 (FIELD MUSEUM) ORIENTED IN FRANKFORT POSITION

Recent grave series; male, 43

SKULL 192010 (FIELD MUSEUM) ORIENTED IN FRANKFORT POSITION
Recent grave series; male, 37

SKULL 192013 (FIELD MUSEUM) ORIENTED IN FRANKFORT POSITION

Recent grave series; male, 21. Note diminutive upper lateral incisors

SKULL 192025 (FIELD MUSEUM) ORIENTED IN FRANKFORT POSITION

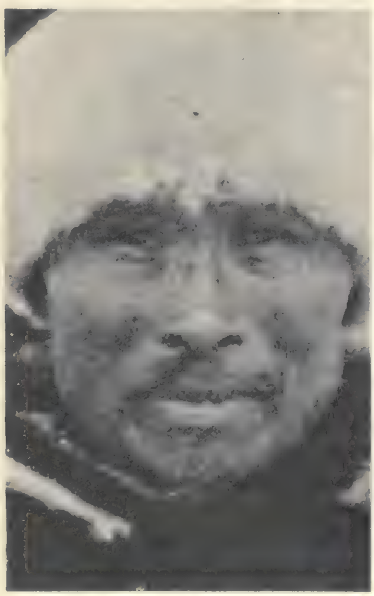
Recent grave series; female, 52

RIGHT HUMERUS OF 192009 (FIELD MUSEUM)
Showing pathological proximal extremity. Recent grave series

a

b

c



d

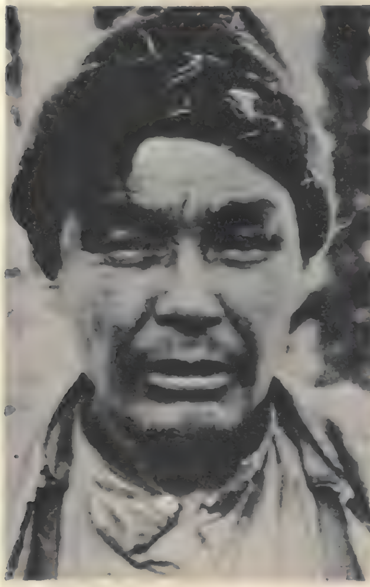
MALE ESKIMOS FROM NAIN, LABRADOR

Figs. *a*, *b*, and *d*, Strong's subjects 21, 188, and 13, respectively (photographs by Strong)

a b c d

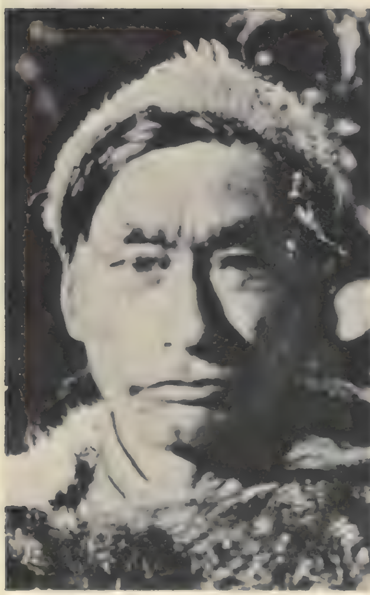
MALE INDIANS, DAVIS INLET AND BARREN GROUND BANDS

Figs. a–d, Strong's subjects 1, 4, 3, and 39, respectively (photographs by Strong)



a

b



c

d

INDIANS, DAVIS INLET AND BARREN GROUND BANDS

Fig. *d*, Female. Figs. *a* and *c*, Strong's subjects 34 and 43, respectively (photographs by Strong)

ESKIMO WOMEN, HOPEDALE OR NAIN, LABRADOR
Photographs by Langford

a

b

c

d

ESKIMO AND INDIAN WOMEN

Figs. *a* and *b*, Eskimo women, Hopedale or Nain, Labrador. Figs. *c* and *d*, Indian women, Davis Inlet Band. Fig. *c*, Strong's subject 5 (photographs by MacMillan and Strong)

a

b

c

d

FEMALE INDIANS, DAVIS INLET AND BARREN GROUND BANDS

Figs. *a*, *b*, and *c*, Strong's subjects 8, 7, and 37, respectively (photographs by Strong)